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

GB/T 17748-2016

Replacing GB/T 17748-2008

Aluminium-plastic composite panels for curtain walls

建筑幕墙用铝塑复合板

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1 Scope

China's national product standard for the aluminium composite panel used as a building curtain wall - two thin aluminium skins bonded to a plastic core. It specifies the terms and definitions, the classification, specifications and marking, the raw materials, the requirements, the test methods, the inspection rules, and the marking, packaging, transport, storage and accompanying documents for aluminium-plastic composite panels for building curtain walls. Panels for other uses may refer to it. The panel is popular because it is light, flat over large areas, easy to fold and fabricate into cassettes on site, and available in any finish. Its history is also a warning: the core is the whole question. A polyethylene core is combustible, and a facade clad in unmodified polyethylene composite panel behaves as a continuous fuel source once alight, which is how several catastrophic facade fires developed. The standard therefore governs the core material and the fire performance alongside the mechanical properties, and this is where the classification

system matters, because a panel is bought by designation and the designation has to state what is inside it. The requirements cover the aluminium alloy skins and their thickness and coating, the core material, the peel strength of the bond between skin and core - measured by the climbing drum method, since delamination is the failure mode that ends a panel's life - the dimensional tolerances and flatness, the thermal expansion and deflection temperature, the impact resistance, and the durability of the coating under salt spray, heat and humidity and accelerated weathering, since a facade panel is expected to hold its colour for decades. Informative annexes cover the adhesive film and the protective film. Issued on 13 October 2016 and in force since 1 September 2017, it replaces GB/T 17748-2008.

This standard specifies the terms and definitions, classifications, specifications and markings, raw materials, requirements, test methods, inspection rules, signs, packaging, transportation, storage and accompanying documents for aluminum-plastic composite panels (hereinafter referred to as "panels for curtain wall") for building curtain walls. This standard is applicable to aluminum-plastic composite panels for building curtain walls. For aluminum-plastic composite panels for other purposes, they may make reference to this standard.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this standard.

GB/T 191 Packaging - Pictorial marking for handling of goods

GB/T 1457 Test method for climbing drum peel strength of sandwich constructions

GB/T 1634.2 Plastics - Determination of temperature of deflection under load - Part

3 Terms and definitions

The following terms and definitions apply to this document.

3.1 Aluminum-plastic composite panel A three-layer composite panel which uses ordinary plastic or flame- retardancy-treated plastic as the core material, aluminum on both sides, meanwhile the surface of the product is coated with a decorative and protective coating or film (if not specified, it is commonly named as coating) Layer) as the decorative surface, shortly referred to as aluminum-plastic composite panel.

3.2 Aluminum-plastic composite panel for curtain wall The aluminum-plastic composite panel which uses the flame-retardancy- treated plastic as the core material, is used as the materials for curtain wall.

3.6 Adhesive film A composite film formed by co-extruding a functional polymer material (referred to as a binder) and polyethylene in a production process of an aluminum-plastic composite panel, which is used for bonding between a core material and an aluminum material.

4 Classification, specifications and marking

4.1 Classification It is divided as follows based on combustion performance.

4.2 Specifications The common specifications of panels for curtain wall are as shown in Table 1. Other specifications may be agreed between the supplier and the purchaser.

4.3 Marking It is marked in the order of product name, type, specification, thickness of aluminum, and standard number.

5 Raw materials

5.1 Aluminum The aluminum used for panels for curtain wall shall be the 3xxx series, 5xxx series or other series of aluminum alloys with better resistance to corrosion and mechanical properties in accordance with GB/T 3880.2.

5.2 Coating The surface of the panel for curtain wall should be coated with a fluorocarbon resin, or other coatings with comparable or superior properties.

5.3 Adhesive film The thickness of the adhesive film of the panels for curtain wall shall not be less than

0.05 mm, the binder content shall not be less than 60%. For other requirements, see Appendix A.

6 Requirements

6.1 Aluminum thickness The average thickness of the aluminum used for the panels for the curtain wall shall not be less than

0.50 mm, the minimum thickness shall not be less than

0.48 mm.

6.2 Appearance The appearance of the panels for curtain wall shall be neat and tidy. The non- decorative finish shall not have damage which may affect the use of product. The appearance of the decorative surface shall meet the requirements of Table 2.

6.3 Allowable deviation of dimension The allowable deviation of the dimension of the panels for curtain wall shall meet the requirements of Table

3. The allowable deviation of the dimensions of the special specification may be agreed between the supplier and the purchaser.

6.4 Thickness and performance of coating The thickness and performance of the coating of panel for curtain wall shall comply with the requirements of Table 4.

6.5 Physical and mechanical properties The physical and mechanical properties of the panels for curtain wall shall comply with the requirements of Table 5.

6.6 Combustion performance The combustion performance of the panels for curtain wall shall meet the requirements of Table 6.

7 Test methods

7.1 Test environment Before the test, the specimen shall be placed in the standard environment as specified in GB/T 2918 for 24 hours. Unless otherwise specified, the test shall also be carried out under these conditions.

7.2 Preparation of test pieces When preparing the test piece, it shall be considered that the performance of the decorative surface of the product is required to be consistent in the longitudinal and transverse directions.

7.3 Aluminum thickness Peel the aluminum material off from the specimen as a test piece. Use the measuring instrument which has a minimum division value of

0.01 mm to measure the thickness of the aluminum (excluding the thickness of the coatings, etc.). The measuring point contains at least 5 places. four corners and the center. Use the arithmetic mean and minimum value of all the measured values as the test results.

7.4 Appearance In the natural light that is not exposed to direct sunlight, erect the panels along the same production direction side by side to form one plane, the angle between the panel and the horizontal plane is $70^{\circ} \pm 10^{\circ}$, perform visual inspection at 3 m away from the center of the formed panel plane.

7.5 Allowable deviation of dimension

7.5.1 Length and width Use a steel tape which has the minimum division value of 1 mm to measure the length or width. Use the maximum difference between all measured values and nominal values of length or width as the test result.

7.5.5 Warpage Place the concave surface of the panel upwards on the horizontal platform flatly, use a 1000 long steel ruler to stand laterally on the panel. Then use the steel ruler which has the minimum division value of

0.5 mm to measure the maximum gap height between the steel ruler and the panel. Use the maximum value of all the measured values is used as the test result.

7.6 Coating performance

7.6.1 Coating thickness It is performed in accordance with the provisions of GB/T 4957. The