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Plywood for concrete form

混凝土模板用胶合板

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Plywood for concrete form

1 Scope

This standard specifies the terms and definitions, classification, requirements, measurement and inspection methods, inspection rules and marks, packaging, transportation, and storage of plywood for concrete form.

This standard applies to plywood for concrete form made of wood veneer.

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) is applicable to this standard.

GB/T 9846-2015 Plywood for general use

GB/T 17657-2013 Test methods of evaluating the properties of wood-based panels and surface decorated wood-based panels

GB/T 18259 Terminology for wood-based panels and their surface decoration

GB/T 19367 Wood-based panels -- Determination of dimensions of panels

3 Terms and Definitions

The terms and definitions defined in GB/T 18259 and the following apply to this document.

3.1 Plywood for concrete form

The plywood that can pass the boiling test and be used as concrete forming molds.

3.2 Modular system

The modular system is a standard scale series selected for the coordination between the dimensions of buildings, building components, building products, and related equipment.

4 Categories

According to the surface treatment, plywood is divided into:

a) plywood for unfaced concrete form (referred to as plain board);

b) plywood for resin-faced concrete form (referred to as adhesive-coated board);

c) plywood for impregnated bond paper-faced concrete form (referred to as film-coated board).

5 Requirements

5.1 Wood species

5.1.1 The wood species of plywood used for concrete form can be masson pine, Yunnan pine, larch, radiata pine, poplar, eucalyptus, birch, Schima superba, sweetgum, Alniphyllum fortunei, Lauan, Okoume, Apitong, etc.

5.1.2 The wood species of the face-panel of plywood used for concrete form shall be the same as that of the plywood.

5.2 Structure of the plywood

5.2.1 The wood grains of two adjacent layers of veneer shall be perpendicular to each other. The veneers of the symmetrical layers at both sides of the central layer shall be of the same wood species or wood species with similar physical properties, and the thicknesses shall be the same.

5.2.2 The uniformity of the structure of the finished product shall be considered; the total thickness of the surface veneer and the veneers with the same fiber direction as the surface veneer shall not be less than 40% of the thickness of the plywood and not be more than 60% of that. The number of layers of the plywood shall not be less than 7 layers. The thickness of the surface veneer shall not be less than 1.2 mm, and the thickness of the surface veneer of the film-coated board shall not be less than 0.8 mm.

5.2.3 The same layer of surface veneer shall be of the same wood species; the tight side of the surface veneer shall be outward; the surface veneer and core veneer shall not be made by terminating without scarf joint or finger-splicing.

5.2.4 Inclusions that affect the use shall not be left in the plywood. Non-porous adhesive tape for seaming must not be used inside plywood. If it is used for splicing or repairing the surface veneer, except for no modification, the tape shall be removed, and no obvious tape marks shall be left.

--- Metal wire (such as steel wire): the diameter shall not be more than 0.5 mm.

6.1.2 Measurement of length, width and thickness of boards

Carry out according to the relevant regulations in GB/T 19367.

6.1.3 Squareness measurement

Carry out according to the relevant regulations in GB/T 19367.

6.1.4 Edge straightness measurement

Carry out according to the relevant regulations in GB/T 19367.

6.1.5 Flatness measurement

Carry out according to the relevant regulations in GB/T 19367.

6.2 Sampling and size specification of specimens

6.2.1 Instruments and measuring tools

The instruments and measuring tools include:

--- Micrometer: the division value shall be 0.01 mm;

--- Vernier caliper: the division value shall be 0.1 mm;

--- Steel measuring tape: the division value shall be 1.0 mm;

--- Balance: the sensibility shall be able to reach 0.01 g.

6.2.2 Sawing of specimens

6.2.2.1 Take three 600 mm×600 mm specimens according to Figure 1 from the plywood (to be tested) used for the concrete form. When the board is not long enough to be intercepted three specimens of the specified size, take 2 samples to prepare the specimens. Attention shall be paid to the direction (longitudinal or transverse) of the static bending strength and elasticity modulus.

6.3.1 Appearance quality

6.3.1.1 Measure the appearance defects of plywood by visual inspection or with a steel ruler (the accuracy shall be 0.1 mm).

6.3.1.2 The number, cumulative size or range of limiting defects shall be calculated according to the average number per square meter of the entire board; the defects on the width or length of the board shall be calculated according to the average number per meter at the most serious end; take the larger one among the nearest adjacent integers as the result.

6.3.1.3 The various defects of the inner veneer that can be seen from the surface veneer shall not exceed the allowable limit of each grade of surface veneer. When the holes of the core board that is next to the surface veneer make the board surface sag, the dents shall be included in the counting of allowable defects of each grade. When the holes of each layer of veneer that is not close to the surface veneer cause defects at the edge of the board, their depths shall not exceed 1/2 of the allowable value of the defect; otherwise, the defects shall be counted as gaps.

6.3.1.4 The diameter of the knot or hole of the plywood used for concrete form refers to the diameter perpendicular to the wood grain as usual. The diameter of the knot or hole is measured by the vertical distance between the tangents of its contour lines.

6.3.1.5 For non-modulus boards, various defects outside the nominal size are not counted.

6.3.1.6 Determination of results: Check the plywood for concrete form one by one, inspect the appearance defects, and then determine whether the plywood is qualified or not.

6.3.2 Moisture content

The moisture content inspection shall be carried out according to the provisions of 4.3 in GB/T 17657-2013.

6.3.3 Bonding strength

The bonding strength inspection shall be carried out according to the provisions of 4.17 in GB/T 17657-2013. The size of the A-type specimen shall be used.

Specimen pretreatment conditions: the pretreatment shall be carried out according to the provisions of 4.17.5.2.3 in GB/T 17657-2013.

6.3.4 Static bending strength and elasticity modulus

The inspections of static bending strength and elasticity modulus shall be carried out

according to the provisions of 4.7 in GB/T 17657-2013.

6.3.5 Dip peel strength

Test the film-coated board's dip peel strength between the impregnated bond paper and the surface layer of the plywood.

The inspection of dip peel strength shall be carried out according to the provisions of 4.19 in GB/T 17657-2013.

Specimen pretreatment conditions: the pretreatment shall be carried out according to the provisions of specimen treatment conditions a) in 4.19.4.1 of GB/T 17657-2013.

7 Inspection rules

7.1 Inspection classification

7.1.1 Product inspection is divided into factory inspection and type test.

7.1.2 The factory inspection includes the following items:

a) Appearance quality inspection (5.5);

b) Specification and dimension inspection (5.4);

c) Moisture content and bonding strength inspections that are included in the items of Requirements for Physical and Mechanical Properties (Table 6).

7.1.3 Type test includes appearance quality inspection (5.5), specification and dimension inspection (5.4) and inspection of all physical and mechanical properties (see Table 6). Type test shall be carried out when one of the following situations happens:

a) When the original and auxiliary materials and production processes have undergone major changes;

b) When the production resumes after a long-term shutdown;

c) During normal production, the type test shall not be less than once a year;

d) When the quality supervision agency proposes type test requirements.

7.2 Sampling inspection

7.2.1 Appearance quality inspection

Appearance quality sampling inspection shall be carried out in accordance with the provisions of 7.2.1 in GB/T 9846-2015.

7.2.2 Specification and dimension inspections

Sampling inspections of specifications and dimensions shall be carried out in accordance with the provisions of 7.2.2 in GB/T 9846-2015.

7.2.3 Physical and mechanical properties inspections

The sampling plan for physical and mechanical properties inspections shall be carried out in accordance with the provisions of 7.2.3 in GB/T 9846-2015.

7.3 Judgment Rules

7.3.1 Judgment rules for appearance quality and size

When the appearance quality, size and deviation meet the requirements of 5.4, 5.5, 7.2.1 and 7.2.2, the appearance quality and specifications of the batch of samples shall be judged as qualified; otherwise, it shall be downgraded or judged as unqualified.

7.3.2 Rules for determining physical and mechanical properties

7.3.2.1 When the arithmetic mean of the moisture content of each plywood meets the requirements of the index value, the moisture content is qualified; otherwise, the re-inspection shall be carried out. When the reinspected specimen meets the requirements of the index value, the batch shall be judged as qualified; otherwise, it is unqualified.

7.3.2.2 When the number of test pieces that meet the requirements of the bonding strength index value is equal to or greater than 90% of the total number of valid test pieces, the batch shall be judged as qualified; when the proportion is less than 70%, the batch shall be judged as unqualified. When the number of test pieces that meet the requirements of the bonding strength index value is equal to or greater than 70% of the total number of valid test pieces, but less than 90%, re-sampling is allowed for re-inspection. When the number of test pieces that meet the requirements of the bonding strength index value is equal to or greater than 90% of the total number of valid test pieces, the batch is qualified; when the proportion is less than 90%, the batch is unqualified.

7.3.2.3 If the arithmetic means of the static bending strength and elasticity modulus of each plywood meet the requirements of the index value, and the minimum value is not less than 80% of the index value, then the static bending strength and elasticity modulus are qualified; otherwise, re-inspection shall be carried out. When the re-inspected specimens meet the requirements of the index value, the batch is judged as qualified; otherwise, the static bending strength and elasticity modulus of the batch are unqualified.

7.3.2.4 When all specimens for the dip peel strength test meet the requirements of the index value, the dip peel strength of the batch is qualified; otherwise, re-inspection shall

be carried out. When all re-inspected specimens meet the requirements of the index value, the batch is judged as qualified; otherwise, the dip peel strength of the batch is unqualified.

7.4 Comprehensive judgment

When the appearance quality, specification and deviation, and physical and mechanical properties of the samples all meet the requirements of the corresponding grade, the batch of products is judged as qualified. Otherwise, the batch shall be downgraded or judged as unqualified.

7.5 Measurement of products

Finished products are measured and calculated in cubic meters, and their allowable tolerances shall not be included. When measuring a single board, the result can be accurate to 0.00001 m^3; when calculating a batch of boards, the result can be accurate to 0.001 m^3.

8 Marking, packaging, transportation and storage

8.1 Logo

At the lower right corner of the back veneer of each board, or the side, stamp the signs to indicate the product name, grade, and to remind users of the direction of the board (longitudinal and transverse).

8.2 Packaging

Products shall be properly packaged according to different types and specifications. Each package shall be accompanied by an inspection label indicating the product name, wood species and thickness of the surface veneer, category, grade, manufacturer's name, trademark, size, quantity, product standard number, etc.

8.3 Transportation and storage

The product shall be protected from moisture, rain, the sun and deformation during transportation and storage.

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