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Waterproof materials for pitched roof - Underlayments of self adhering polymer modified bituminous

坡屋面用防水材料 自粘聚合物沥青防水垫层

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Waterproof materials for pitched roof - Underlayments of self adhering polymer modified bituminous

1 Scope

This standard specifies the classification, requirements, test methods, inspection rules and signs, packaging, transportation, storage of underlayments of self adhering polymer modified bituminous, for waterproof materials for pitched roof.

This standard is applicable to the underlayments of self adhering polymer modified bituminous waterproof underlayment (referred to as self-adhesive underlayment), which is used under various tiles and other roofing materials, in pitched roof construction projects.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) 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/T 328.8 Test methods for building sheets for waterproofing - Part 8: Bitumen sheets for waterproofing-tensile properties

GB/T 328.14 Test methods for building sheets for waterproofing - Part 14: Bitumen sheets for waterproofing-flexibility at low temperature

GB/T 328.18 Test methods for building sheets for waterproofing - Part 18: Bitumen sheets for waterproofing-resistance to tearing (nail shank)

GB/T 328.20 Test methods for building sheets for waterproofing - Part 20: Bitumen sheets for waterproofing-resistance to peeling of joints

GB/T 16777-1997 Test methods for building waterproof coatings

3 Categories

3.1 Type

The bitumen, which is used in the product, is completely self-adhesive polymer bitumen.

The upper surface material of the self-adhesive underlayment is generally polyethylene film (PE), polyester film (PET), aluminum foil (AL), etc., without internal reinforcing base.

The self-adhesive underlayment can also use other types of upper surface materials, according to the manufacturer's requirements.

3.2 Specifications

The width specification is 1 m; the other width specifications shall be agreed upon by both parties.

The thickness specification is not less than 0.8 mm.

3.3 Marking

It is marked in the order of product's main material name, tire base, upper surface material, thickness, width, length, standard number.

Example: The waterproof underlayment, which uses self-adhesive polymer bitumen PE membrane surface, has a thickness of 1.2 mm, width of 1 m, length of 20 m, is marked as:

Self-adhesive polymer bitumen waterproof underlayment PE-1.2 mm x 1 m x 20 m - JC/T 1068-2008

4 General requirements

The surface of self-adhesive underlayment products shall have anti-skid function, which is conducive to the safe construction of personnel.

5 Requirements

5.1 Size deviation

The allowable deviation of width is ±3% of manufacturer's specified value.

The allowable deviation of the area is not less than 99% of the value specified by the manufacturer.

The thickness shall not be less than 0.8 mm; the average thickness shall not be less than the value specified by the manufacturer.

5.2 Appearance

lower end of the underlayment. Hang the aluminum plate vertically in an oven at (70 ± 2) °C for 24 hours. Measure the sliding distance of the test piece.

6.7 Flexibility at low temperature

Test according to GB/T 328.14; the diameter of the bending shaft is 20 mm. Take 10 test pieces in the longitudinal direction. Carry out test, with five upper surfaces and five lower surfaces face outwards. If the surface of at least four of five test pieces has no crack, this surface is qualified. If both surfaces are qualified, the test passes.

6.8 Peel strength

6.8.1 Underlayment and aluminum plate

6.8.1.1 23 °C peel strength

Refer to GB/T 328.20, to stick the underlayment test piece on the surface of a smooth aluminum plate, that has been cleaned with a solvent. The bonding surface is recommended to be 50 mm x 75 mm. One end of the aluminum plate is clamped into the fixture. The underlayment at the same end is bent 180° and clamped into another fixture. Carry out the test. Use the maximum force to calculate the peel strength, the unit is N/mm. Take the arithmetic mean value of five test pieces as the test result.

6.8.1.2 5 °C Peel strength

Place the test piece and the aluminum plate at (5 ± 2) °C for 24 hours. Then bond them at this temperature. Then place them at this temperature for 2 hours. Measure the peel strength at this temperature.

6.8.2 Underlayment and underlayment

Test according to GB/T 328.20. The lower surface of one test piece is bonded to the upper surface of another test piece.

6.9 Nail shank tear strength

Test according to GB/T 328.18.

6.10 UV treatment

Put the unbonded test piece into the ultraviolet box, that meets the requirements of 7.1.7 in GB/T 16777-1997. The exposed surface faces the light; the test piece is parallel to the lamp tube, at a distance of 47 cm ~ 50 cm. The temperature of the space, which is 50 mm left and right of the surface of test piece, is (45 ± 3) °C. The irradiation time is 240 h. Take it out, to observe whether there is foaming, pulverization, cracks or wrinkling on the surface of the test piece. Then carry out the test, according to 6.8.1.1. The size of the test piece is 150 mm x 50 mm. The bonding surface is 50 mm x 50 mm.

6.11 Water tightness of nail shank

6.11.1 Preparation of test piece

Cut a sample of 300 mm x 300 mm. Remove the anti-adhesive material of the underlayment, under the condition of (23 ± 2) °C. Place the underlayment lightly on a plywood, which has a thickness of not less than 10 mm and the same size as the underlayment. The edge of the test piece is pressed and bonded, so that the test piece does not fall when it is erected. The underlayment is then tapped, to bond it to the plywood.

Put two blocks of wood under the plywood for support, to make it easier to drive the nails in. Drive two flange-less galvanized threaded roof nails, which have a length of (30 ± 4) mm and diameter (3.5 ~ 4) mm, into the plywood from the surface of the underlayment. The position is near the center of the specimen. The spacing between nails is (25 ~ 50) mm. Drive the nail, until the nail cap is flush with the surface of the underlayment. Then tap the nail head from the back, to lift the nail, so that the distance between the nail cap and the underlayment surface is 6 mm.

A total of two test pieces are prepared.

6.11.2 Test procedure

Place a circular tube, which has a diameter of (150 ~ 250) mm and a height of not less than 150 mm, in the center on the surface of the underlayment layer of the test piece, which is placed horizontally. Then use sealant, to seal it on the underlayment layer along the outer edge. After standing for 2 h, seal it along the inner edge. Then cure it at room temperature for 24 hours.

Put it in a jar, which has no lid and a similar diameter. Then add distilled water to the round tube above; the water level is (130 ± 3) mm. Then transfer it to a refrigerator, at (4 ± 2) °C. Let it standing for 3 d.

6.11.3 Result observation

Take it out, to observe whether there is any water trace in the jar below, on the end of the nail, on the bottom of the plywood. Pour off the water in the round tube and dry it. Peel off the underlayment. Observe whether there is any water mark on the back of the underlayment.

If no water marks are observed on the two test pieces, it is considered that the test is passed without water seepage.

6.12 Heat aging

Place the test piece horizontally in an oven, at (70 ± 2) °C for 7 days. Take it out and place it at (23 ± 2) °C for 24 hours. Cut the test piece. Measure the tensile properties,

The exit-factory inspection items include: dimensional deviation, appearance, tensile force, fracture elongation rate, low temperature flexibility, heat resistance, peel strength between underlayment and aluminum plate (23 °C), sticking-hold force.

7.1.2 Type inspection

The type inspection items include all the requirements in Chapter 5. The type inspection is carried out, under the following circumstances:

a) When a new product is put into production or when the product is type-finalized and identified;

b) During normal production, once a year;

c) When major changes occur in raw materials, processes, etc., which may affect product quality;

d) When there is a large difference between the exit-factory inspection result and the last type inspection result;

e) When the production is resumed after suspension for more than 6 months;

f) When the national quality supervision and inspection agency puts forward the type inspection requirements.

7.2 Group-batching

The products of 10000 m^2 of the same type and same specification form a batch. If it is less than 10000 m^2, it is also considered as a batch.

7.3 Sampling

In each batch of products, five rolls are randomly selected for inspection of size deviation, appearance, mass per unit area.

After passing the above inspection, randomly select a sample, which has a volume of at least 1.5 m^2, for testing.

7.4 Judgment rules

7.4.1 Size deviation, appearance, mass per unit area

7.4.1.1 When the size deviation, appearance, mass per unit area all meet the requirements of 5.1 and 5.2, the size deviation and appearance are judged to be qualified. For unqualified products, it is allowed to randomly select another roll from the batch of products, for re-inspection. If all the products meet the standard requirements, they will be judged as qualified in terms of size deviation and appearance. If there is still unqualified item, this batch of products is judged as unqualified.

7.4.2 Physical and mechanical properties

7.4.2.1 If the test results meet the requirements in 5.3, the physical and mechanical properties of this batch of products are judged to be qualified. If only one of them does not meet the standard, it is allowed to randomly select another roll from the batch of products, for single-item re-inspection. If it is qualified, the physical and mechanical properties of the batch of products are judged to be qualified; otherwise, the physical and mechanical properties of the batch of products are judged to be unqualified.

7.4.3 General decision

When the sample results meet all the requirements in Chapter 5 of the standard, the batch of products is judged to be qualified.

8 Sign, packaging, transportation, storage

8.1 Sign

The product's outer packaging shall include:

a) The name and address of the manufacturer;

b) Trademarks;

c) Product marking;

d) Date of manufacture or batch number;

e) Area;

f) Precautions for storage and transportation;

g) Inspection qualification mark.

8.2 Packaging

The product is packaged in a manner which is suitable for transportation and storage.

8.3 Transportation and storage

During transportation and storage, products of different types and specifications shall be stacked separately AND shall not be mixed. Avoid exposure to sun and rain. Pay attention to ventilation. The storage temperature shall not be higher than 45 °C. The underlayment shall be stored flat. The stacking height shall not exceed five layers.

Prevent tilting or side pressure during transportation. Cover with cloth if necessary.

Under normal transportation and storage conditions, the storage period is one year, from

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