HOLLOW WALLBOARD AND PROCESSING METHOD THEREOF

TECHNICAL FIELD

The present disclosure relates to the technical field of decoration and adornment, and in particular, to a hollow wallboard and a processing method thereof.

BACKGROUND

At present, a large number of integrated wallboards covered by decorative films have appeared on the market. Due to its advantage of easy installation, diverse decorative forms, detachability, and meeting assembly-type decoration requirements, the installation efficiency and the decoration effect of the wallboard are greatly improved. It is ready to use, without the vacant period of traditional decoration, and popular in many consumers.

SUMMARY

Technical Problem

Based on the reasons for cost control, the existing integrated wallboard basically adopts single-sided coating, that is, only the decorative film is coated on the facing side of the wallboard. During the process of realizing the present disclosure, the technicians discovered that since the linear thermal expansion coefficient and elastic modulus of the decorative film and the wallboard are inconsistent, the degree of thermal expansion and contraction of the decorative film and the wallboard is inconsistent due to the temperature difference during use, leading to deformation of the wallboard and affecting the flatness of the wall.

Technical Solutions

In view of this, the embodiment of the present disclosure provides a hollow wallboard and a processing method thereof to solve the above technical problems.

One embodiment of the present disclosure provides a hollow wallboard, which includes: an upper substrate, a lower substrate, and a covering layer. The upper substrate has a veneer and a backside arranged oppositely, and the covering layer may be attached to the veneer. The backside may be provided with a plurality of ribs, the lower substrate may be attached to the plurality of ribs, and may be arranged opposite to the upper substrate, the temperature stress of the lower

substrate to the upper substrate is equal to that of the upper substrate to the covering layer.

Optionally, the plurality of ribs may be arranged along the width direction of the backside, each rib may be perpendicular to the backside, and the distance between adjacent ribs may be equal.

Optionally, a plurality of boss portions corresponding to the ribs may be provided on the lower substrate, and the ribs may be fixedly connected to the boss portions.

Optionally, the ribs located on both sides of the upper substrate in the width direction may be the left rib and the right rib respectively, the right rib may be provided with an insert plate. An insert groove is formed between the left rib and a left protrusion of the lower substrate, the insert groove is used for receiving an insert plate of an adjacent hollow wallboard.

Optionally, it may further include a bent plate, which includes a horizontal plate and a vertical plate connected vertically to each other. The horizontal plate may be fixedly connected with and coplanar with the upper substrate, and the vertical plate and the right rib may be both vertically connected with the insert plate.

Optionally, the side of the insert groove on the lower substrate may extend toward the side away from the insert plate to form a fixing plate for fixing to the wall.

Optionally, the left protrusion may be hollow, and the width of the end surface of the left protrusion facing the upper substrate may be equal to the sum of the groove depth of the insert groove and the thickness of the left rib.

Optionally, a plurality of functional grooves may be provided on the surface of the lower substrate facing away from the upper substrate, and the plurality of functional grooves may be arranged in parallel along the width direction of the lower substrate, and the distance between adjacent functional grooves may be equal.

Optionally, the upper substrate and the lower substrate may have a double-layer extrusion structure.

The embodiment of the present disclosure also provides a processing method based on the above-mentioned hollow wallboard, which includes: cooling and shaping the upper substrate after the upper substrate is extruded and molded; setting the material of the lower substrate according to the temperature stress of the covering layer to the upper substrate, and using the material to be extruded and molded on the basis of the upper substrate to obtain the lower

substrate, then cooling and shaping; pasting the covering layer on the veneer of the upper substrate.

Beneficial Effect

The hollow wallboard and its processing method provided by the embodiments of the present disclosure set an upper substrate, a lower substrate and a covering layer, and set the temperature stress of the lower substrate to the upper substrate and the temperature stress of the covering layer to the upper substrate as the same, such that the lower substrate can overcome the deformation problem caused by the temperature difference of the single-sided covering wallboard, and the flatness of the wallboard can be ensured. Moreover, all parts can be industrialized in the factory. Only simple assembly may be required on site, with simple structure and small weight. It not only can improve installation efficiency, but also reduce the technical requirements for installation workers and reduce labor costs. At the same time, the wallboard does not need to be bonded on site, which may be environmentally friendly and pollution-free.

DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic structural diagram of a hollow wallboard according to one embodiment of the present disclosure.

FIG. 2 is a partial enlarged view of A in FIG. 1.

FIG. 3 is a partial enlarged view of B in FIG. 1.

FIG. 4 is an assembly diagram of a hollow wallboard according to an embodiment of the present disclosure.

FIG. 5 is a schematic diagram of the processing of the hollow wallboard according to one embodiment of the present disclosure.

DETAILED DESCRIPTION OF THE EMBODIMENTS

The technical solution of the present disclosure will be described in detail below with reference to the drawings and specific embodiments. The same parts are indicated by the same reference numerals. It should be noted that the words "front", "back", "left", "right", "upper" and "lower" used in the following description refer to the directions in the drawings, and the words "inner" and "outer" respectively refers to the direction toward or away from the geometric center

of a particular parts.

FIG. 1 shows a schematic structural diagram of a hollow wallboard according to an embodiment of the present disclosure. As shown in FIG. 1, the hollow wallboard provided by the embodiment of the present disclosure may include an upper substrate 2, a lower substrate 3 and a covering layer 1.

As shown in FIG. 2, the upper substrate 2 may have a veneer and a backside arranged oppositely to each other, and the covering layer 1 may be attached to the veneer.

A plurality of ribs 21 may be provided on the backside. In this embodiment, there may be gaps between adjacent ribs 21.

The lower substrate 3 may be attached to a plurality of ribs 21 and may be arranged opposite to the upper substrate 2. The temperature stress of the lower substrate 3 to the upper substrate 2 may be equal to the temperature stress of the covering layer 1 to the upper substrate 2.

Wherein, the temperature stress is the stress formed by thermal expansion and contraction of different materials when the temperature is increased or decreased.

During the use of the hollow wallboard, affected by the temperature, the hollow wallboard will expand and contract with heat.

Since the temperature stress of the lower substrate 3 and the covering layer 1 to the upper substrate 2 may be equal, the temperature stress of the lower substrate 3 to the upper substrate 2 may offset the temperature stress of the covering layer 1 to the upper substrate 2, so that the hollow wallboard will not deform.

The hollow wallboard provided by the embodiment of the present disclosure is provided with an upper substrate, a lower substrate and a covering layer, and the temperature stress of the lower substrate to the upper substrate and the temperature stress of the covering layer to the upper substrate may be set equal, so that the lower substrate can overcome the deformation problem caused by the temperature difference of the single-sided covering wallboard, and ensure the flatness of the wallboard. All parts can be industrialized in the factory. Only simple assembly may be required on site, the structure may be simple, and the weight may be small, which not only can improve installation efficiency, but also can reduce the technical requirements for installation workers and reduce labor costs. At the same time, the wallboard does not need to be

bonded on site, which is environmentally friendly and pollution-free.

Further, the plurality of ribs 21 may be arranged along the width direction of the backside, and each rib 21 may be perpendicular to the backside, and the distance between adjacent ribs 21 may be equal to facilitate the arrangement of the ribs 21 and facilitate the processing and manufacturing of the upper substrate 2.

Preferably, a plurality of boss portions 31 one-to-one corresponding to the ribs 21 may be provided on the lower substrate 3, and the end surface of the ribs 21 may be fixedly connected to the end surface of the boss portion 31.

By providing the boss portion 31, the connection between the rib 21 and the lower substrate 3 can be facilitated.

Furthermore, the upper substrate 2 and the lower substrate 3 may be of a double-layer extrusion structure, which can satisfy the requirement that the same part is composed of different materials, and there are more choices in the structural design of the parts.

In this embodiment, the upper substrate 2 may be first extruded and formed, and after cooling and shaping, the lower substrate 3 may be extruded and formed on the basis of the upper substrate 2, and then the setting of the upper substrate 2 and the lower substrate 3 can be completed.

Optionally, as shown in FIGS. 3-4, the ribs 21 located on both sides in the width direction of the upper substrate 2 may be respectively a left rib 21-1 and a right rib 21-2.

The right rib 21-2 may be provided with an insert plate 5, and an insert groove 4 may be formed between the left rib 21-1 and a left protrusion 31-1 of the lower substrate 3, the insert groove 4 is used for receiving an insert plate 5 of an adjacent hollow wallboard.

By providing the insert plate 5 and insert groove 4 on both sides in the width direction of the hollow wallboard, the connection of adjacent hollow wallboard can be facilitated and the decoration efficiency can be improved.

As shown in FIG. 4, the hollow wallboard 100 and the hollow wallboard 200 may be inserted into the insert groove 4 through the insert plate 5.

Furthermore, the hollow wallboard may further include a bent plate 22. The bent plate 22 may include a horizontal plate and a vertical plate connected to each other vertically.

The horizontal plate may be fixedly connected to and coplanar with the upper substrate 2.

Both the vertical plate and the right rib 21-2 may be vertically connected to the insert plate 5. The bent plate 22, the right rib 21-2 and the insert plate 5 may enclose a hollow area.

By providing the bent plate 22, the strength of the insert plate 5 can be increased, so as to achieve better insert connection.

As shown in FIGS. 1-3, the covering layer 1 may be attached to the veneer, the end surface of the upper substrate 2 in the width direction, the bent plate 22, the surface of the insert plate 5 away from the lower substrate, and the end surface of the insert plate 5, so as to better improve the decorative effect.

Preferably, the side of the lower substrate 3 where the insert groove 4 is located may extend toward the side away from the insert plate 5 to form a fixing plate 32 for fixing to the wall. The fixing plate 32 may be fixed on the wall by screws 6 to increase the installation firmness of the hollow wallboard.

Further, a positioning recess 321 may be provided on the fixing plate 32. By providing the positioning recess 321, the installation of the screw 6 can be facilitated and the decoration efficiency can be improved.

Preferably, as shown in FIG. 2, the left protrusion 31-1 may be hollow, and the width of the end surface of the left protrusion 31-1 facing the upper substrate 2 may be equal to the sum of the groove depth of the insert groove 4 and the thickness of the left rib 21-1, which can ensure the depth of the insert groove 4, thereby ensuring the insertion firmness of the insert plate 5 and the insert groove 4.

Further, a plurality of functional grooves 33 may be provided on the surface of the lower substrate 3 facing away from the upper substrate 2.

The plurality of functional grooves 33 may be arranged in parallel along the width direction of the lower substrate 3, and the distance between adjacent functional grooves 33 may be equal.

By providing the functional groove 33, not only the stress relief of the hollow wallboard can be facilitated, but also the air circulation between the wallboard and the wall can be increased.

In a specific embodiment, the surface of the lower substrate 3 facing away from the upper substrate 2 may be recessed in a direction approaching the upper substrate 2, and a boss may be formed on the surface of the lower substrate 3 facing the upper substrate 2.

Each boss may correspond to three boss portions 31, and the three boss portions 31 may be

respectively located at the two ends and the middle position in the width direction of the boss.

In a specific embodiment, the cross section of the functional groove 33 perpendicular to the length direction may be an isosceles trapezoid. The width of the topline of the isosceles trapezoid close to the upper substrate 2 may be smaller than the width of the baseline far from the upper substrate 2.

Further, the covering layer 1 may include a decorative layer and an adhesive layer, and the decorative layer may be attached to the veneer of the upper substrate 2 through the adhesive layer, which not only facilitates the attachment of the covering layer 1, but also ensures the bond firmness of the covering layer 1.

In this embodiment, the decorative layer may be a plastic decorative film such as PVC (Polyvinylchloride), PE (Polyethylene), PVDF (polyvinylidenefluoride), etc., and the adhesive layer may use PUR (polyurethane) coating glue.

The embodiment of the present disclosure also provides a processing method based on the above-mentioned hollow wallboard, as shown in FIG. 5, which may include:

cooling and shaping after the upper substrate 2 is extruded and molded;

setting the material of the lower substrate 3 according to the temperature stress of the covering layer 1 to the upper substrate 2, and using the material to be extruded and molded on the basis of the upper substrate 2 to obtain the lower substrate 3, then cooling and shaping;

obtaining the ratio of various ingredients based on that the temperature stress of the covering layer 1 to the upper substrate 2 equal to the temperature stress of the lower substrate 3 to the upper substrate 2, and through conversion of linear thermal expansion coefficient, elastic modulus and thickness; and obtaining the material of the lower substrate 3 according to the ratio of ingredient;

then using this material to extrude the lower substrate 3 on the basis of the upper substrate 2.

In this embodiment, the linear expansion coefficient of the lower substrate 3 may be greater than the linear expansion coefficient of the upper substrate 2, which not only facilitates extrusion molding, but also ensures the temperature stress of the lower substrate 3 to the upper substrate 2.

The covering layer 1 may be pasted on the veneer of the upper substrate 2.

The adhesive layer may be coated on the veneer of the upper substrate 2 first, and then the

covering layer 1 may be attached to the adhesive layer.

The hollow wallboard processing method provided by the embodiment of the present disclosure provides the upper substrate, the lower substrate and the covering layer, and sets the temperature stress of the lower substrate to the upper substrate equal to the temperature stress of the covering layer to the upper substrate, so that the lower substrate can overcome the deformation problem caused by the temperature difference of the single-sided covering wallboard, and ensure the flatness of the wallboard. All parts can be industrialized in the factory. Only simple assembly may be required on site, the structure may be simple, and the weight may be small, which can not only improve the installation efficiency, but also reduce the technical requirements for installation workers and reduce labor costs. At the same time, the wallboard does not need to be bonded on site, which may be environmentally friendly and pollution-free.

In sum, the technical solutions of the present disclosure have been described in detail combining with specific embodiments, and the specific embodiments described are used to help understand the idea of the present disclosure. Derivations and modifications made by those skilled in the art on the basis of the specific embodiments of the present disclosure also fall within the protection scope of the present disclosure.

CLAIMS

1. A hollow wallboard, comprising: an upper substrate, a lower substrate and a covering layer; the upper substrate having a veneer and a backside arranged oppositely, and the covering layer being attached to the veneer; the backside being provided with a plurality of ribs, the lower substrate being attached to the plurality of ribs, and being arranged opposite to the upper substrate, a temperature stress of the lower substrate to the upper substrate being equal to a temperature stress of the covering layer to the upper substrate.

2. The hollow wallboard according to claim 1, wherein the plurality of ribs are arranged along a width direction of the backside, each of the plurality of ribs is perpendicular to the backside, and a distance between adjacent ribs is equal.

3. The hollow wallboard according to claim 2, wherein the lower substrate is provided with a plurality of boss portions corresponding to the plurality of ribs, and each of the plurality of ribs is fixedly connected to each of the plurality of boss portions.

4. The hollow wallboard according to claim 3, wherein ribs located on both sides of the upper substrate in a width direction are a left rib and a right rib, respectively, the right rib is provided with an insert plate, and an insert groove is formed between the left rib and a left protrusion of the lower substrate, the insert groove is used for receiving an insert plate of an adjacent hollow wallboard.

5. The hollow wallboard according to claim 4, the hollow wallboard further comprises a bent plate, the bent plate comprises a horizontal plate and a vertical plate connected to each other vertically, the horizontal plate is fixedly connected with and coplanar with the upper substrate, the vertical plate and the right rib are both vertically connected with the insert plate.

6. The hollow wallboard according to claim 4, wherein a side of the lower substrate where the insert groove is located extends toward a side away from the insert plate to form a fixing

plate for fixing to the wall.

7. The hollow wallboard according to claim 6, wherein the left protrusion is hollow, and a width of an end surface of the left protrusion facing the upper substrate is equal to a sum of a depth of the insert groove and a thickness of the left rib.

8. The hollow wallboard according to claim 1, wherein a surface of the lower substrate facing away from the upper substrate is provided with a plurality of functional grooves, and the plurality of functional grooves are arranged in parallel along a width direction of the lower substrate, and distances between adjacent functional grooves are equal.

9. The hollow wallboard according to any one of claims 1-8, wherein each of the upper substrate and the lower substrate is of a double-layer extrusion structure.

10. A method for processing the hollow wallboard according to any one of claims 1-8, comprising steps of:

cooling and shaping the upper substrate after the upper substrate is extruded and molded;

setting materials of the lower substrate according to the temperature stress of the covering layer to the upper substrate, and using the materials to be extruded and molded on a basis of the upper substrate to obtain the lower substrate, then cooling and shaping;

pasting the covering layer on the veneer of the upper substrate.