

DESCRIPTION

Title of Invention

SKIN ADHESIVE SHEET

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Technical Field

[0001]

The present invention relates to a skin adhesive sheet to be made adhere to the skin.

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Priority is claimed on Japanese Patent Application No. 2018-056476, filed on March 23, 2018, the content of which is incorporated herein by reference.

Background Art

[0002]

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Conventionally, skin adhesive sheets which are made adhere to the skin for medical purposes or cosmetic purposes have been widely used. This skin adhesive sheet includes an adhesive agent which is made adhere to the skin and a release paper which covers a sticky material layer of this adhesive agent.

[0003]

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Meanwhile, demands for skin adhesive sheets to be made adhere to a portion often exposed to the public such as a face have been increasing in recent years. In the skin adhesive sheet, the adhesive agent is formed in a thin film shape so as to be less conspicuous. Therefore, to prevent deformation and damage from occurring in the adhesive agent when stored before use, the skin adhesive sheet is stored in a state in

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which a surface of the adhesive agent, that is, a surface opposite to the release paper, is

covered with a rigid protective film. In this skin adhesive sheet, when the release paper and the protective film are separated from the adhesive agent when used, if a user's finger touches the adhesive agent, the thin-film-shaped adhesive agent tends to be wrinkled.

Thus, PTL 1 proposes a skin adhesive sheet in which the release paper and the protective
5 film are separable from the adhesive agent without a touch on the adhesive agent.

[0004]

On the other hand, PTL 2 discloses a skin adhesive sheet which can be adhered to the skin with less procedural steps. As depicted in FIG. 10(b), this skin adhesive sheet 80 includes an adhesive agent 83 formed of a base material layer 81 and a sticky
10 material layer 82, a protective film 84 which covers a surface of the base material layer 81, and a release paper 85 which covers the sticky material layer 82. Also, this skin adhesive sheet is divided, as depicted in FIG. 10(a) and FIG. 10(b), into a main body part 87 and a removal part 88 by a slit 86 formed so as to reach the protective film 84 through the release paper 85 and the adhesive agent 83. And, when using the skin adhesive
15 sheet 80, the main body part 87 of the release paper 85 is first peeled, and the main body part 87 of the exposed sticky material layer 82 is made adhere to the skin. Then, with the protective film 84 being removed together with the removal part 88 of the release paper 85 and the removal part 88 of the adhesive agent 83, only the main body part 87 of the adhesive agent 83 remains on the skin. In this manner, the skin adhesive sheet 80 of
20 PTL 2 can be adhered to the skin through less procedural steps.

Citation List

Patent Literature

[0005]

25 [PTL 1] Japanese Unexamined Patent Application, First Publication No.

2016-140717

[PTL 2] Japanese Patent No. 5384730

Summary of Invention

5 Technical Problem

[0006]

However, as a result of a test, it has been revealed that in the skin adhesive sheet of PTL 1, the procedure for separating the release paper and the protective film from the adhesive agent has many steps and is complex and it is therefore difficult to make the
10 skin adhesive sheet reliably adhere to the skin unless the written description of the procedure is referred to.

[0007]

Moreover, when a sample was created and tested, it has been revealed that in the skin adhesive sheet 80 of PTL 2, when the protective film 84 is removed together with
15 the removal part 88 of the release paper 85 and the removal part 88 of the adhesive agent 83, the main body part 87 and the removal part 88 of the adhesive agent 83 cannot be smoothly separated. Thus, as a result of studies of the cause, it has been found that the main body part 87 and the removal part 88 of the sticky material layer 82 stick to each other.

20 [0008]

Thus, the present invention was made in view of these circumstances, and its object is to provide a skin adhesive sheet which can easily and reliably adhered to the skin through less procedural steps and allows the main body part and the removal part of the adhesive agent to be smoothly separated when the protective film is removed.

Solution to Problem

[0009]

A skin adhesive sheet according to one aspect of the present invention is directed to a skin adhesive sheet to be made adhere to a skin, the skin adhesive sheet including:

5 an adhesive agent having a thin-film-shaped base material layer and a sticky material layer laminated on a back surface side of the base material layer;

 a release paper provided to cover the sticky material layer of the adhesive agent;

 a protective film provided to cover a front surface side of the base material layer of the adhesive agent;

10 a first slit formed in the adhesive agent over the entire length in a thickness direction thereof so as to divide the adhesive agent into a main body part to be made adhere to the skin when used and a removal part to be removed when used; and

 a second slit formed in the release paper over the entire length in a thickness direction thereof so as to divide the release paper into a peel part to be peeled when used

15 and a holding part to be held by a user when used,

 wherein the adhesive agent is formed so as to have a cross-sectional area decreasing from the main body part toward a portion near the first slit and increasing from the portion near the first slit toward the removal part.

[0010]

20 Note in the skin adhesive sheet according to one aspect of the present invention that the protective film may have the same shape as a shape of the adhesive agent in a planar view.

[0011]

 Also, in the skin adhesive sheet according to one aspect of the present invention,
25 an angle formed by an outer shape line of the main body part and an outer shape line of

the removal part, with the first slit interposed therebetween, in a planar view may be an acute angle.

[0012]

Furthermore, in the skin adhesive sheet according to one aspect of the present invention, the main body part may have an outer shape which is any one of a circular shape, an oval shape, a polygonal shape, a fan shape, and a boomerang shape in the planar view.

[0013]

Still further, in the skin adhesive sheet according to one aspect of the present invention, the removal part may have an outer shape which is any one of a circular shape, an oval shape, a polygonal shape, a fan shape, and a boomerang shape in the planar view.

[0014]

Yet still further, in the skin adhesive sheet according to one aspect of the present invention, the adhesive agent may be formed so that the removal part has an outer shape which is a circular shape in the planar view, and may be formed so as to have a width dimension in a direction along the first slit in the planar view, the width dimension being equal to or smaller than 0.4 times as long as a diameter of the removal part at a position of the first slit.

[0015]

Yet still further, in the skin adhesive sheet according to one aspect of the present invention, the adhesive agent may be formed so as to have the width dimension in the direction along the first slit in the planar view, the width dimension being equal to or smaller than 2 mm at the position of the first slit.

[0016]

Yet still further, in the skin adhesive sheet according to one aspect of the present

invention, the base material layer may have a thickness equal to or larger than 5 μm and equal to or smaller than 50 μm and the sticky material layer may have a thickness equal to or larger than 15 μm and equal to or smaller than 60 μm .

[0017]

5 Yet still further, in the skin adhesive sheet according to one aspect of the present invention, the protective film may have a peel force equal to or larger than 0.028 N/20 mm and equal to or smaller than 0.064 N/20 mm with respect to the base material layer, and the sticky material layer may have a tack strength equal to or larger than 1.263 N/20 mm and equal to or smaller than 2.947 N/20 mm with respect to a stainless plate.

10 [0018]

Yet still further, in the skin adhesive sheet according to one aspect of the present invention, the protective film may have a base part which covers the main body part of the adhesive agent and a protruding part which covers the removal part, and the skin adhesive sheet may further include a third slit formed in the protective film over the
15 entire length thereof in a thickness direction and extending from a predetermined position on an outer edge of the base part near an end part of the first slit to a predetermined position inside the base part in the planar view.

[0019]

Yet still further, in the skin adhesive sheet according to one aspect of the present
20 invention, the third slit may extend to a direction forming an acute angle with the first slit in the planar view.

[0020]

Yet still further, in the skin adhesive sheet according to one aspect of the present invention, the third slit may have a curved shape projecting toward a side of the first slit
25 in the planar view.

[0021]

Yet still further, in the skin adhesive sheet according to one aspect of the present invention, the protective film may have a pair of said third slits extending from respective positions on the outer edge of the base part near both end parts of the first slit in the planar view.

Advantageous Effects of Invention

[0022]

In the skin adhesive sheet according to one aspect of the present invention, the sheet can be adhered to the skin through less procedural steps and, when the protective film is removed, the main body part and the removal part of the adhesive agent can be smoothly separated.

Brief Description of Drawings

[0023]

FIG. 1 is a schematic plan view depicting the structure of a skin adhesive sheet according to a first embodiment of the present invention.

FIG. 2 is a schematic sectional view depicting a cross section along an A-A line in FIG. 1.

FIG. 3 is a schematic exploded perspective view depicting the structure of the skin adhesive sheet 1.

FIG. 4 depicts descriptive diagrams depicting a usage procedure of the skin adhesive sheet 1 according to the first embodiment of the present invention.

FIG. 5 depicts schematic plan views depicting skin adhesive sheets 20, 30, 40, and 50 according to examples of modified first embodiment of the present invention.

FIG. 6 is a schematic plan view depicting the structure of a skin adhesive sheet 60 according to a second embodiment of the present invention.

FIG. 7 is a schematic sectional view depicting a cross section along a B-B line in FIG. 6.

5 FIG. 8 is a schematic perspective view for describing a method of using the skin adhesive sheet 60 according to the second embodiment of the present invention.

FIG. 9 depicts schematic plan views depicting skin adhesive sheets 70, 90, 100, and 110 according to examples of modified second embodiment of the present invention.

10 FIG. 10 depicts a schematic sectional view depicting the structure of a skin adhesive sheet 80 according to a conventional example, in which (a) is a schematic plan view and (b) is a sectional view along an A-A line in (a).

Description of Embodiments

[0024]

15 In the following, skin adhesive sheets according to embodiments of the present invention are described with reference to the drawings. Note that the skin adhesive sheet of the present invention can be used for medical purposes, cosmetic purposes, and so forth.

[0025]

20 (Structure of skin adhesive sheet according to first embodiment)

FIG. 1 to FIG. 3 are diagrams depicting the structure of a skin adhesive sheet 1 according to a first embodiment of the present invention. FIG. 1 is a schematic plan view, FIG. 2 is a sectional view along an A-A line in FIG. 1, and FIG. 3 is a schematic exploded perspective view. The skin adhesive sheet 1 includes, as depicted in FIG. 2 and FIG. 3, a thin-film-shaped adhesive agent 2 having a gourd-form outer shape in a

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planar view, a release paper 3 provided to cover a back surface side of the adhesive agent 2, and a protective film 4 provided to cover a front surface side of the adhesive agent 2.

[0026]

(Adhesive agent)

5 Made adhere to the skin, the adhesive agent 2 serves a function of protecting the skin surface from an outer environment or making the skin surface invisible from outside. This adhesive agent 2 has, as depicted in FIG. 2 and FIG. 3, a thin-film-shaped base material layer 5 and a sticky material layer 6 laminated on a back surface side of this base material layer 5. And, in this adhesive agent 2, a first slit 7 is formed so as to
10 extend over the entire length in a thickness direction of the adhesive agent 2 as depicted in FIG. 2 and to extend over the entire length in a width direction of the adhesive agent 2 in the planar view as depicted in FIG. 3. With this, the base material layer 5 and the sticky material layer 6 are each divided by this first slit 7 into two, that is, a main body part 8 to be made adhere to the skin when used and a removal part 9 to be removed when
15 used. However, the sticky material layer 6 is in a state in which a side part of the main body part 8 and a side part of the removal part 9 stick to each other at the position of the first slit 7.

[0027]

 The adhesive agent 2 as configured above is formed, as depicted in FIG. 3, so as
20 to have a cross-sectional area S decreasing from the main body part 8 toward a portion near the first slit 7 and increasing from the portion near the first slit 7 toward the removal part 9. That is, a cross-sectional area $S1$ of the adhesive agent 2 near the first slit 7 is smaller than a cross-sectional area $S2$ of the adhesive agent 2 at a predetermined position in the main body part 8 and is smaller than a cross-sectional area $S3$ of the adhesive agent
25 2 at a predetermined position in the removal part 9. In other words, the adhesive agent

2 is formed, as depicted in FIG. 1 and FIG. 3, so as to have a portion near the first slit 7 in the planar view becoming narrower in the width direction than other portions, thereby having a constricted part 10 in a middle part in a length direction of the adhesive agent 2. And, at this constricted part 10, an angle of constriction α formed by the outer shape line of the main body part 8 and the outer shape line of the removal part 9 in the planar view is an acute angle, that is, with a magnitude equal to or smaller than 90° .

[0028]

In the first embodiment, the adhesive agent 2 near the first slit 7 in the planar view has a width dimension W set substantially at 2 mm. Also, the adhesive agent 2 is formed so that the main body part 8 is formed in a circular shape having a diameter D1 of substantially 15 mm and the removal part 9 is formed in a circular shape having a diameter D2 of substantially 5 mm in the planar view. Therefore, the width dimension W of the adhesive agent 2 at the position of the first slit 7 has a magnitude substantially 0.13 times as long as the diameter D1 of the main body part 8 and the magnitude substantially 0.4 times as long as the diameter D2 of the removal part 9. Also, the thickness of the entire adhesive agent 2 with the base material layer 5 and the sticky material layer 6 combined together is set substantially at $27\ \mu\text{m}$.

[0029]

The base material layer 5 serves a function of holding the sticky material layer 6. This base material layer 5 is a thin-film-shaped member made of polyurethane and having a substantially constant thickness. In the first embodiment, the thickness of the base material layer 5 is set substantially at $7\ \mu\text{m}$. Note that, as a material for forming the base material layer 5, in place of polyurethane, for example, biaxially oriented polypropylene (so-called OPP), polyethylene terephthalate (so-called PET), or

polyethylene (so-called PE) can be used.

[0030]

The sticky material layer 6 serves a function of attaching the adhesive agent 2 to the skin. This sticky material layer 6 is made of an acrylic-resin-based bonding agent and, as depicted in FIG. 2, is laminated on the back surface side of the base material layer 5 so as to have a substantially constant thickness. Also, the sticky material layer 6 is formed, as depicted in FIG. 3, so as to have the same shape as that of the base material layer 5 in the planar view. Note that, as a material forming the sticky material layer 6, in place of the acrylic-based bonding agent, a conventionally known bonding agent can be used, for example, an urethane-resin-based, silicon-based, or rubber-based bonding agent.

[0031]

In the first embodiment, the thickness of the sticky material layer 6 is set substantially at 20 μm . Also, the sticky material layer 6 has a tack strength with respect to a stainless plate set to be equal to or larger than 1.263 N/20 mm and equal to or smaller than 2.947 N/20 mm, when the adhesive agent 2 has a width dimension of 20 mm. In the specification, the tack strength of the sticky material layer 6 with respect to the skin is defined by a tack strength with respect to a stainless plate (not depicted). This is because the state of the human skin widely varies depending on the age, sex, constitution, and so forth and measurement values of the tack strength greatly vary and therefore the tack strength is defined by the tack strength with respect to the stainless steel plate, whose surface state is uniform.

[0032]

(Release paper)

The release paper 3 serves a function of preventing the tack strength from

decreasing with the sticky material layer 6 being exposed to outside. Although not depicted in detail in the drawings, this release paper 3 is a laminate paper with its one surface subjected to a peeling process. And, in this release paper 3, a second slit 11 is formed so as to extend over the entire length in the thickness direction of the release paper 3 as depicted in FIG. 2 and to extend over the entire length in the width direction of the release paper 3 in the planar view as depicted in FIG. 3. This second slit 11 is positioned, as depicted in FIG. 2 and FIG. 3, at a position overlapping the first slit 7 in the planar view, that is, vertically right below the first slit 7 and on the same line as the first slit 7 in a side view. And, by this second slit 11, the release paper 3 is divided into two, that is, a peel part 12 to be peeled when used and a holding part 13 to be held by a user when used. Here, as depicted in FIG. 1 and FIG. 3, the peel part 12 is formed in a rectangular shape larger than the main body part 8 of the adhesive agent 2 in the planar view. On the other hand, the holding part 13 is formed in a circular shape with a size substantially equal to that of the removal part 9 of the adhesive agent 2 in the planar view.

[0033]

The release paper 3 configured as above is, as depicted in FIG. 1 and FIG. 3, attached to the back surface of the adhesive agent 2 so as to cover the sticky material layer 6 with the surface subjected to the peeling process, and extends to outside of the outer shape of the adhesive agent 2 in the planar view. Note that, as the release paper 3, in place of the laminate paper subjected to the peeling process, a conventionally known release paper can be used, for example, a polyester film or polyolefin film subjected to the peeling process.

[0034]

(Protective film)

The protective film 4 serves a function of protecting the skin adhesive sheet 1 when stored so as to prevent deformation or damage from occurring in the adhesive agent

2. This protective film 4 has, although not depicted in detail in the drawings, a PET film and an OPP film bonded together. The protective film 4 has, as depicted in FIG. 1 and FIG. 3, a gourd-form outer shape substantially equal to that of the adhesive agent 2 in the planar view and, as depicted in FIG. 2, is formed so as to be considerably thicker than the adhesive agent 2. The protective film 4 configured as above is, as depicted in FIG. 3, attached to the surface of the adhesive agent 2 so as to cover the base material layer 5. Here, the peel force of the protective film 4 with respect to the base material layer 5 is set to be larger than the tack strength of the sticky material layer 6 with respect to the release paper 3 and smaller than the tack strength of the sticky material layer 6 with respect to the skin.

[0035]

In the first embodiment, the thickness of the protective film 4 is set substantially at 115 μm . Also, the peel force of the protective film 4 with respect to the base material layer 5 is set to be equal to or larger than 0.028 N/20 mm and equal to or smaller than 0.064 N/20 mm, when the protective film 4 has a width dimension of 20 mm. Note that when the protective film 4 has a small width dimension, the peel force is extremely small and is difficult to measure. Thus, the peel force of the protective film 4 having a width dimension of 50 mm with respect to the base material layer 5 was measured, and the measurement result was converted to acquire the peel force of the protective film 4 having a width dimension of 20 mm.

[0036]

(Method of using skin adhesive sheet according to first embodiment)

Next, a method of using the skin adhesive sheet 1 according to the first

embodiment and its operations and effects are described. FIG. 4 depicts descriptive diagrams depicting a usage procedure of the skin adhesive sheet 1. A user of the skin adhesive sheet 1 first makes the peel part 12 of the release paper 3 peeled from the skin adhesive sheet 1. That is, although not depicted in detail in the drawings, as pressing a portion of the release paper 3 extending to outside of the adhesive agent 2 with one hand, the user holds a portion where the holding part 13 of the release paper 3, the removal part 9 of the adhesive agent 2, and the protective film 4 are laminated (referred to as a "holding part and so forth 14") with the other hand. Here, since the removal part 9 of the sticky material layer 6 is covered with the holding part 13 of the release paper 3, finger tips of the user do not get dirty by touching the sticky material layer 6.

[0037]

Then, as depicted in FIG. 4(a), the user pulls the holding part and so forth 14 upward. Here, as described above, the peel force of the protective film 4 with respect to the base material layer 5 is set to be larger than the tack strength of the sticky material layer 6 with respect to the release paper 3. Therefore, when the holding part and so forth 14 are pulled upward, the adhesive agent 2 is peeled from the release paper 3 without peeling of the protective film 4 from the adhesive agent 2. Also, as described above, the sticky material layer 6 of the adhesive agent 2 is in a state in which the side part of the main body part 8 and the side part of the removal part 9 stick to each other at the position of the first slit 7. Therefore, when the user pulls the holding part and so forth 14 upward, the main body part 8 of the adhesive agent 2 is not separated from the removal part 9 to fall onto the peel part 12 of the release paper 3.

[0038]

Next, the user makes the skin adhesive sheet 1, with the peel part 12 of the release paper 3 peeled, adhere to the skin. That is, while holding the holding part and so

forth 14, as depicted in FIG. 4(b), the user makes the main body part 8 of the sticky material layer 6 exposed outside, with the peel part 12 of the release paper 3 peeled, adhere to a predetermined location on the skin Sk. Here, the removal part 9 of the sticky material layer 6 is covered with the holding part 13 of the release paper 3, and is thus not attached to the skin Sk. The user pays attention so that, in particular, a portion of the main body part 8 of the sticky material layer 6 in the proximity of the removal part 9 is reliably attached to the skin Sk. Note that at this moment, the sticky material layer 6 is still in the state in which the side part of the main body part 8 and the side part of the removal part 9 stick to each other at the position of the first slit 7.

10 [0039]

Here, in the first embodiment, the thickness of the base material layer 5 is set substantially at 7 μm . Therefore, a sufficient tensile strength is ensured in the base material layer 5. Thus, there is an advantage in that when and after the skin adhesive sheet 1 is made adhere to the skin Sk, deformation or damage is less likely to occur in the base material layer 5. Note that to ensure a sufficient tensile strength in the base material layer 5 as described above, the thickness of the base material layer 5 is suitably set to be equal to or larger than 5 μm .

[0040]

Next, the user removes the protective film 4 and so forth from the skin adhesive sheet 1. That is, the user holds the holding part and so forth 14 again and, as depicted in FIG. 4(c), pulls the holding part and so forth 14 upward by taking a portion near the constricted part 10 as a fulcrum. Then, in the sticky material layer 6, the removal part 9 is separated from the main body part 8 at the position of the first slit 7. With this, the holding part 13 of the release paper 3, the removal part 9 of the adhesive agent 2, and the protective film 4 are integrally separated from the main body part 8 of the adhesive agent

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2. Note that since the removal part 9 of the sticky material layer 6 is covered with the holding part 13 even at this moment, finger tips of the user do not get dirty by touching the sticky material layer 6.

[0041]

5 Here, the adhesive agent 2 is formed so as to have the cross-sectional area S decreasing from the main body part 8 toward a portion near the first slit 7 and increasing from the portion near the first slit 7 toward the removal part 9. As described above, in the adhesive agent 2, since the constricted part 10 is provided near the first slit 7, compared with a case in which the constricted part 10 is not provided, a region where the
10 main body part 8 and the removal part 9 of the sticky material layer 6 stick to each other is narrow. Therefore, only with a slight force acting onto the holding part and so forth 14, the removal part 9 of the sticky material layer 6 is smoothly separated from the main body part 8. Also, since the constricted part 10 is provided to the adhesive agent 2, when an upward force acts on the holding part and so forth 14, stress concentration
15 occurs near the constricted part 10 of the adhesive agent 2. Therefore, only with a slight force acting onto the holding part and so forth 14, the removal part 9 of the sticky material layer 6 is more smoothly separated from the main body part 8. Furthermore, since the outer shape line of the main body part 8 and the outer shape line of the removal part 9 form an acute angle at the constricted part 10, with the first slit 7 interposed
20 therebetween, compared with a case in which the outer shape line of the main body part 8 and the outer shape line of the removal part 9 form an obtuse angle, stress concentration tends to occur at the constricted part 10. Therefore, only with a slight force being applied to the holding part and so forth 14, the removal part 9 of the sticky material layer 6 is further smoothly separated from the main body part 8.

25 [0042]

In the first embodiment, the width dimension W of the adhesive agent 2 near the first slit 7 in the planar view is set to be substantially 0.4 times as long as the diameter D_2 of the removal part 9, that is, substantially at 2 mm. Therefore, stress concentration tends to occur near the constricted part 10, and the removal part 9 of the sticky material layer 6 is smoothly separated from the main body part 8. Note that to cause stress concentration easily in this manner, it is suitable that the width dimension W of the adhesive agent 2 near the first slit 7 be set to be equal to or smaller than 0.4 times as long as the diameter D_2 of the removal part 9 having a circular shape in the planar view and be set to be equal to or smaller than 2 mm irrespective of the shape of the removal part 9 in the planar view.

[0043]

Also as described above, the peel force of the protective film 4 with respect to the base material layer 5 is set to be smaller than the tack strength of the sticky material layer 6 with respect to the skin Sk . Therefore, when the holding part and so forth 14 are pulled upward, the protective film 4 is peeled from the adhesive agent 2 without peeling of the adhesive agent 2 from the skin Sk .

[0044]

Then, when the protective film 4 and so forth are completely removed from the skin adhesive sheet 1, as depicted in FIG. 4(d), only the main body part 8 of the adhesive agent 2 remains on the skin Sk . With this, the operation of making the skin adhesive sheet 1 adhere to the skin Sk is completed.

[0045]

Here, in the first embodiment, the thickness of the base material layer 5 is set substantially at $7\ \mu\text{m}$. Therefore, since appropriate moisture penetration is ensured in the base material layer 5, there is an advantage in that rash is less likely to occur in a

region of the skin Sk covered with the adhesive agent 2. Note that to ensure this appropriate moisture penetration, the thickness of the base material layer 5 is suitably set to be equal to or smaller than 50 μm .

[0046]

5 Also in the first embodiment, the thickness of the sticky material layer 6 is set substantially at 20 μm . Therefore, since a sufficient tack strength is ensured in the sticky material layer 6, there is an advantage in that the adhesive agent 2 is less likely to peel from the skin Sk. In addition, since appropriate moisture penetration is also ensured in the sticky material layer 6, there is an advantage in that rash is less likely to occur in the region of the skin Sk covered with the adhesive agent 2. Note that to ensure a sufficient tack strength and also ensure appropriate moisture penetration as described above, the thickness of the sticky material layer 6 is suitably set to be equal to or larger than 15 μm and equal to or smaller than 60 μm .

[0047]

15 Furthermore, in the first embodiment, the thickness of the adhesive agent 2 as a whole with the base material layer 5 and the sticky material layer 6 combined together is set substantially at 27 μm . Therefore, there is an advantage in that when the adhesive agent 2 is peeled from the skin Sk after use, a finger tip is easily caught in a side part of the adhesive agent 2, thereby the adhesive agent 2 being easily peeled. In addition, 20 there is also an advantage in that, as not significantly protruding from the surface of the skin Sk when adhering to the skin Sk, the adhesive agent 2 is less conspicuous when used. Note that for the purpose of being less conspicuous when used and ensuring easiness of peeling after use, the thickness of the adhesive agent 2 is suitably set to be equal to or larger than 20 μm and equal to or smaller than 110 μm .

[0048]

As described above, in the skin adhesive sheet 1 according to the first embodiment, it is possible to achieve, in a balanced manner, both of peeling of the main body part 8 of the adhesive agent 2 from the release paper 3 without being separated from the removal part 9 when the peel part 12 of the release paper 3 is peeled from the skin adhesive sheet 1 and smooth separation of the removal part 9 of the adhesive agent 2 from the main body part 8 when the protective film 4 and so forth are removed from the skin adhesive sheet 1 attached to the skin Sk.

[0049]

10 (Examples of modified first embodiment)

In the adhesive agent 2 of the first embodiment, its main body part 8 is formed in a circular shape in the planar view, and the removal part 9 is also formed in a circular shape in the planar view. However, as long as the adhesive agent 2 has the constricted part 10 in a middle part in the length direction, the shapes of the main body part 8 and the removal part 9 in the planar view can be changed as appropriate, and each may have any of, for example, an oval shape, a polygonal shape, a fan shape, and a boomerang shape. FIG. 5 depicts schematic plan views depicting skin adhesive sheets 20, 30, 40, and 50 according to examples of modified first embodiment. In the skin adhesive sheet 20 depicted in FIG. 5(a), its main body part 21 and removal part 22 are both formed in an oval shape in the planar view. In the skin adhesive sheet 30 depicted in FIG. 5(b), its main body part 31 is formed in a substantially rectangular shape in the planar view, and its removal part 32 is formed in a pentagonal shape in the planar view. In the skin adhesive sheet 40 depicted in FIG. 5(c), its main body part 41 is formed in a substantially triangular shape in the planar view, and its removal part 42 is formed in a fan shape in the planar view. In the skin adhesive sheet 50 depicted in FIG. 5(d), its main body part 51 is

formed in a hexagonal shape in the planar view, and its removal part 52 is formed in a boomerang shape in the planar view.

[0050]

While the adhesive agent 2 of the first embodiment has a two-layer structure
5 formed of the base material layer 5 and the sticky material layer 6, the adhesive agent 2 according to the present invention may have a structure of three or more layers in which, for example, another layer not depicted is interposed between the base material layer 5 and the sticky material layer 6. Also, while the adhesive agent 2 of the first
embodiment is configured of the main body part 8 and the removal part 9 with the first
10 slit 7 interposed therebetween, the adhesive agent 2 according to the present invention may be configured to include another part other than the main body part 8 and the removal part 9.

[0051]

While the sticky material layer 6 of the first embodiment has the same shape as
15 that of the base material layer 5 in the planar view, the shape of the sticky material layer 6 in the planar view can be changed as appropriate as long as it can ensure a sufficient tack strength. For example, the sticky material layer 6 may be laminated on only a partial region of the base material layer 5.

[0052]

20 While the first slit 7 of the first embodiment is on the same straight line as the second slit 11 in a side view and is positioned at the constricted part 10, the position of the first slit 7 may be slightly deviated from the constricted part 10 in the horizontal direction. However, there is an advantage in that the position of the first slit 7 at the constricted part 10 facilitates smooth separation of the removal part 9 of the sticky
25 material layer 6 from the main body part 8 by the influence of stress concentration

occurring at the constricted part 10.

[0053]

While the release paper 3 of the first embodiment is configured of the peel part 12 and the holding part 13 with the second slit 11 interposed therebetween, the release paper 3 according to the present invention may be configured to include another part other than the peel part 12 and the holding part 13. Also, while the release paper 3 of the first embodiment has its peel part 12 formed larger than the main body part 8 of the adhesive agent 2 in the planar view, the peel part 12 may have the same shape as that of the main body part 8 of the adhesive agent 2 in the planar view. However, there is an advantage in that the shape of the peel part 12 as in the first embodiment facilitates peeling of the peel part 12 from the main body part 8 of the adhesive agent 2.

[0054]

While the protective film 4 of the first embodiment has the same shape as that of the adhesive agent 2 in the planar view, the shape of the protective film 4 in the planar view can be changed as appropriate as long as it can protect the adhesive agent 2. Also, the thickness of the protective film 4 can also be changed as appropriate.

[0055]

(Structure of the skin adhesive sheet according to the second embodiment)

FIG. 6 and FIG. 7 are diagrams depicting the structure of a skin adhesive sheet according to a second embodiment of the present invention, FIG. 6 being a schematic plan view and FIG. 7 being a sectional view along a B-B line in FIG. 6. Compared with the skin adhesive sheet 1 according to the first embodiment, the skin adhesive sheet 60 has a protective film 61 whose structure is different from that of the protective film 4 of the first embodiment. Since other structures of the skin adhesive sheet 60 are the same as those of the skin adhesive sheet 1, the same reference numerals as those of the first

embodiment are used for the respective parts and their description is omitted. Also, various examples of modification described in the first embodiment can also be applied to the skin adhesive sheet 60 according to the second embodiment.

[0056]

5 Compared with the protective film 4 of the first embodiment, the protective film 61 is different only in having a third slit 62. This protective film 61 has, as depicted in FIG. 6 and FIG. 7, a base part 63 which covers the main body part 8 of the adhesive agent 2 in the planar view and a protruding part 64 which covers the removal part 9 of the adhesive agent 2 in the planar view. And, provided between the base part 63 and the
10 protruding part 64 is a constricted part 65 formed so as to be narrower in a width direction than the other portions. That is, although not depicted in detail in the drawings, the protective film 61 has a cross-sectional area decreasing from the base part 63 toward the constricted part 65 and increasing from the constricted part 65 toward the protruding part 64.

15 [0057]

The third slit 62 serves a function of making the protective film 61 easily peelable from the adhesive agent 2 when the protective film 61 and so forth are removed from the skin adhesive sheet 60 attached to the skin Sk. In more detail, in the skin adhesive sheet 1 according to the first embodiment, when the holding part and so forth 14
20 are pulled upward as depicted in FIG. 4(c), the removal part 9 of the adhesive agent 2 is smoothly separated from the main body part 8, but the protective film 4 may not be successfully peeled from the adhesive agent 2. In this case, a problem occurs in which the main body part 8 of the adhesive agent 2 is lifted upward together with the holding part and so forth 14, unlike the case in which the main body part 8 of the adhesive agent
25 2 remains on the skin Sk as depicted in FIG. 4(d). To prevent the occurrence of this

problem, the third slit 62 is formed in the protective film 61 of the second embodiment.

[0058]

The third slit 62 is formed, as depicted in FIG. 6, in an arc shape projecting toward a side of the first slit 7 (indicated by a broken line in FIG. 6) of the adhesive agent
5 2 in the planar view, in more detail, so as to form a part of an arc having the same diameter D1 as that of the base part 63. A starting point 621 of this third slit 62 is provided on an outer edge 631 of the base part 63 at a predetermined position near an end part of the first slit 7 in the planar view. In more detail, the starting point 621 is set near a lower-side end part of the first slit 7 in FIG. 6. And, the third slit 62 diagonally
10 extends toward a direction forming an acute angle with the first slit 7 in the planar view, in more detail, an upper-left direction in FIG. 6. Also, an end point 622 of this third slit 62 is set at a predetermined position inside the base part 63, in more detail, in a center part of the base part 63 in a length direction. Here, "inside the base part 63" means an inner side of the base part 63 exclusive of its outer edge. That is, the base part 63 is not
15 divided by the third slit 62. Also, the third slit 62 is formed, as depicted in FIG. 7, in the protective film 61 over the entire length in a thickness direction thereof.

[0059]

(Method of using skin adhesive sheet according to second embodiment)

Next, a method of using the skin adhesive sheet 60 according to the second
20 embodiment and its operations and effects are described. FIG. 8 is a schematic perspective view for describing the method of using the skin adhesive sheet 60. As with the skin adhesive sheet 1 according to the first embodiment, a user of the skin adhesive sheet 60 first makes the peel part 12 of the release paper 3 peeled from the skin adhesive sheet 60 (refer to FIG. 4(a)), and then makes that skin adhesive sheet 60 adhere to the
25 skin Sk (refer to FIG. 4(b)). Here, while the third slit 62 is formed in the protective film

61, the third slit 62 do not disturb the operations because the sticky agent layer 6 is in a state in which a side part of the main body part 8 and a side part of the removal part 9 stick to each other as described above.

[0060]

5 Next, as with the skin adhesive sheet 1 according to the first embodiment, the user removes the protective film 61 and so forth from the skin adhesive sheet 60 (refer to FIG. 4(c)). Here, for example, a right-handed user, as depicted in FIG. 8, presses a left-side region AL with respect to the third slit 62 in the base part 63 of the protective film 61 from above with the left hand (not depicted), and also holds and pulls the

10 protruding part 64 and so forth upward with the right hand (not depicted). With this, with the left-side region AL with respect to the third slit 62 in the base part 63 being attached to the main body part 8 of the adhesive agent 2, only a right-side region AR with respect to the third slit 62 is peeled from the main body part 8 of the adhesive agent 2.

15 Then, the user moves the left hand off the protective film 61 to peel the left-side region AL with respect to the third slit 62 in the base part 63 from the main body part 8 of the adhesive agent 2.

[0061]

In this manner, since the protective film 61 is not divided by the third slit 62, it is possible to first peel only a part of the protective film 61 from the adhesive agent 2 and

20 then peel the remaining part from the adhesive agent 2. With this, the entire adhesive agent 2 is prevented from being lifted together with the protective film 61, and the adhesive agent 2 can be left on the skin Sk.

[0062]

Also, when the right-handed user holds and pulls the protruding part 64 and so

25 forth of the protective film 61 upward, its operation is such that the right forearm is

rotated from inside toward outside of the body by taking the elbow as a fulcrum. And, so as to be along the path of the right hand at this time, the third slit 62 extends to a direction forming an acute angle with the first slit 7 in the planar view. Therefore, the user can smoothly perform operation of pulling the protruding part 64 and so forth
5 upward.

[0063]

Furthermore, since the third slit 62 has an arc shape projecting toward a side of the first slit 7 in the planar view, compared with a case in which the third slit 62 has a linear shape in the planar view, the left-side region AL with respect to the third slit 62 in
10 FIG. 6, that is, the region AL to be pressed with the left hand, is allocated to be wide. Therefore, in a state in which the wide region AL of the protective film 61 is attached to the main body part 8 of the adhesive agent 2, the remaining narrow region AR of the protective film 61 can be peeled from the main body part 8 of the adhesive agent 2. With this, it is possible to more reliably prevent the entire adhesive agent 2 from being
15 lifted together with the protective film 61.

[0064]

(Examples of modified second embodiment)

In the second embodiment, the third slit 62 is formed so as to form a part of the arc having the same diameter as that of the base part 63 in the planar view. However,
20 the diameter of the arc formed by the third slit 62 can be set at any size. Also, the shape of the third slit 62 in the planar view is not limited to an arc shape, but may be any curved shape, linear shape, branched shape, or the like.

[0065]

In the second embodiment, the starting point 621 of the third slit 62 is set on the
25 outer edge 631 of the base part 63 at a predetermined position near the end part of the

first slit 7 in the planar view. Here, FIG. 9 depicts schematic plan views depicting skin adhesive sheets 70, 90, 100, and 110 according to examples of modified second embodiment of the present invention. Like the skin adhesive sheet 70 depicted in FIG. 9(a), starting point 711 of a third slit 71 can be set at a position slightly away from the first slit 7 on an outer edge 721 of a base part 72. However, there is an advantage in that the closer position to the first slit 7 the starting point 711 is set at, the more smoothly the operation of holding and pulling a protruding part 73 and so forth upward with the right hand can be performed.

[0066]

In the second embodiment, the end point 622 of the third slit 62 is set in the center part of the base part 63 in the length direction. However, the position where the end point 622 is set at is not limited to this position. For example, like the skin adhesive sheet 90 depicted in FIG. 9(b), an end point 922 can be set on an outer edge 911 of a base part 91 near a position opposed to a starting point 921 of a third slit 92. However, there is an advantage in that an appropriately short distance between the starting point 921 and the end point 922 reduces flapping of the adhesive agent 2 (refer to FIG. 7) lifted together with a protruding part 93 when the protruding part 93 and so forth are held by the right hand and are pulled upward and reduces the occurrence of wrinkles or the like in the adhesive agent 2.

[0067]

In the second embodiment, only one third slit 62 is formed in the base part 63 of the protective film 61. However, the number of third slits 62 can be changed as appropriate. For example, like the skin adhesive sheet 100 depicted in FIG. 9(c), a pair of third slits 102 can be formed so that the third slits 102 extend from an outer edge 101 near both left and right end parts of the first slit 7 to a direction orthogonal to the first slit

7. Also, like the skin adhesive sheet 110 depicted in FIG. 9(d), a pair of third slits 112 can be formed so that the third slits 112 extend from an outer edge 111 near both left and right end parts of the first slit 7 to a direction forming an obtuse angle with the first slit 7. According to these skin adhesive sheets 100 and 110, there is an advantage in which, irrespective of whether the user is a right-handed or left-handed person, it is possible to smoothly perform the operation of holding and pulling protruding parts 103 and 113 upward with a dominant hand.

Industrial Applicability

10 [0068]

The "skin" according to the present invention indicates a concept not limited to the human skin but also including the animal skin. Therefore, the skin adhesive sheet according to the present invention can also be used for medical purposes for pets and ornamental purposes for pets.

15

Reference Signs List

[0069]

- 1: skin adhesive sheet
- 2: adhesive agent
- 20 3: release paper
- 4: protective film
- 5: base material layer
- 6: sticky material layer
- 7: first slit
- 25 8: main body part

	9:	removal part
	11:	second slit
	12:	peel part
	13:	holding part
5	62:	third slit
	D2:	diameter (removal part 9)
	S:	cross-sectional area
	Sk:	skin
	W:	width dimension (adhesive agent 2)
10	α :	angle of constriction

CLAIMS

1. A skin adhesive sheet to be made adhere to a skin, the skin adhesive sheet comprising:

5 an adhesive agent having a thin-film-shaped base material layer and a sticky material layer laminated on a back surface side of the base material layer;
a release paper provided to cover the sticky material layer of the adhesive agent;
a protective film provided to cover a front surface side of the base material layer of the adhesive agent;

10 a first slit formed in the adhesive agent over the entire length in a thickness direction thereof and over the entire length in a width direction thereof in a planar view to divide each of the base material layer and the sticky material layer of the adhesive agent into a main body part to be made adhere to the skin when used and a removal part to be removed when used; and

15 a second slit formed in the release paper over the entire length in a thickness direction thereof and over the entire length in a width direction thereof in the planar view to divide the release paper into a peel part to be peeled when used and a holding part to be held by a user when used,

wherein the adhesive agent is formed so as to have a cross-sectional area
20 decreasing from the main body part toward a portion near the first slit and increasing from the portion near the first slit toward the removal part.

2. The skin adhesive sheet according to claim 1,

wherein the protective film has the same shape as a shape of the adhesive agent
25 in a planar view.

3. The skin adhesive sheet according to claim 1 or 2,
wherein an angle formed by an outer shape line of the main body part and an
outer shape line of the removal part, with the first slit interposed therebetween, in the
5 planar view is an acute angle.

4. The skin adhesive sheet according to any one of claims 1 to 3,
wherein the main body part has an outer shape which is any one of a circular
shape, an oval shape, a polygonal shape, a fan shape, and a boomerang shape in the
10 planar view.

5. The skin adhesive sheet according to any one of claims 1 to 4,
wherein the removal part has an outer shape which is any one of a circular
shape, an oval shape, a polygonal shape, a fan shape, and a boomerang shape in the
15 planar view.

6. The skin adhesive sheet according to any one of claims 1 to 5,
wherein the adhesive agent is formed so that the removal part has an outer shape
which is a circular shape in the planar view, and is formed so as to have a width
20 dimension in a direction along the first slit in the planar view, the width dimension being
equal to or smaller than 0.4 times as long as a diameter of the removal part at a position
of the first slit.

7. The skin adhesive sheet according to any one of claims 1 to 6,
25 wherein the adhesive agent is formed so as to have the width dimension in the

direction along the first slit in the planar view, the width dimension being equal to or smaller than 2 mm at the position of the first slit.

8. The skin adhesive sheet according to any one of claims 1 to 7,

5 wherein the base material layer has a thickness equal to or larger than 5 μm and equal to or smaller than 50 μm and the sticky material layer has a thickness equal to or larger than 15 μm and equal to or smaller than 60 μm .

9. The skin adhesive sheet according to any one of claims 1 to 8,

10 wherein the protective film has a peel force equal to or larger than 0.028 N/20 mm and equal to or smaller than 0.064 N/20 mm with respect to the base material layer, and the sticky material layer has a tack strength equal to or larger than 1.263 N/20 mm and equal to or smaller than 2.947 N/20 mm with respect to a stainless plate.

15 10. The skin adhesive sheet according to any one of claims 1 to 9,

wherein the protective film has a base part which covers the main body part of the adhesive agent and a protruding part which covers the removal part, and

the skin adhesive sheet further comprises a third slit formed in the protective film over the entire length in a thickness direction and extending from a predetermined

20 position on an outer edge of the base part near an end part of the first slit to a predetermined position inside the base part in the planar view.

11. A skin adhesive sheet to be made adhere to a skin, the skin adhesive sheet comprising:

an adhesive agent having a thin-film-shaped base material layer and a sticky material layer laminated on a back surface side of the base material layer;

a release paper provided to cover the sticky material layer of the adhesive agent;

a protective film provided to cover a front surface side of the base material layer
5 of the adhesive agent;

a first slit formed in the adhesive agent over the entire length in a thickness direction thereof so as to divide the adhesive agent into a main body part to be made adhere to the skin when used and a removal part to be removed when used; and

a second slit formed in the release paper over the entire length in a thickness
10 direction thereof so as to divide the release paper into a peel part to be peeled when used and a holding part to be held by a user when used,

wherein the adhesive agent is formed so as to have a cross-sectional area decreasing from the main body part toward a portion near the first slit and increasing from the portion near the first slit toward the removal part,

15 the protective film has a base part which covers the main body part of the adhesive agent and a protruding part which covers the removal part, and

the skin adhesive sheet further comprises a third slit formed in the protective film over the entire length in a thickness direction thereof and extending from a predetermined position on an outer edge of the base part near an end part of the first slit
20 to a predetermined position inside the base part in the planar view.

12. The skin adhesive sheet according to claim 10 or 11,

wherein the third slit extends to a direction forming an acute angle with the first slit in the planar view.

13. The skin adhesive sheet according to any one of claims 10 to 12,
wherein the third slit has a curved shape projecting toward a side of the first slit
in the planar view.

5 14. The skin adhesive sheet according to claim 10 or 11,
wherein the protective film has a pair of said third slits extending from
respective positions on the outer edge of the base part near both end parts of the first slit
in the planar view.