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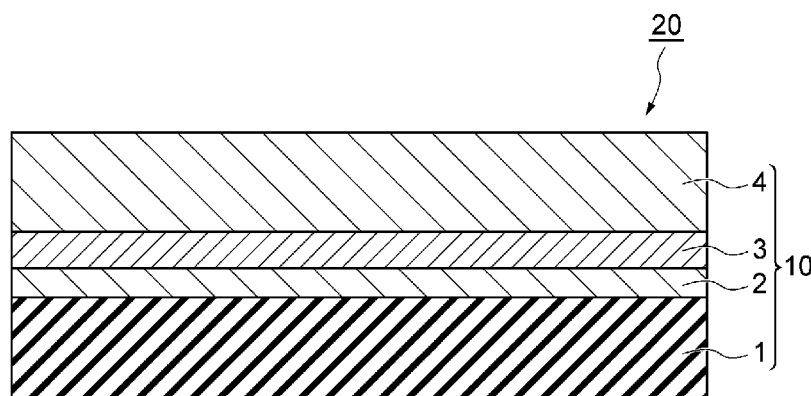
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(54) Title: PACKAGING MATERIAL FOR AQUEOUS CONTENT AND PACKAGING BAG FOR AQUEOUS CONTENT

(54) 発明の名称: 水系内容物用包装材及び水系内容物用包装袋



(57) Abstract: This packaging material for aqueous content is a packaging bag comprising at least a gas barrier laminate obtained by laminating, in the sequence listed, a paper substrate, an anchor coating layer, a vapor deposition layer, and an overcoat layer, the paper substrate having a mass of at least 50 mass% relative to the total mass of the packaging material, the vapor deposition layer containing a metal or a metal oxide, the overcoat layer containing a polyolefin that has a carboxylic acid base, and the overcoat layer having a thickness of over 3 μm .

(57) 要約: 水系内容物用包装材は、紙基材と、アンカーコート層と、蒸着層と、オーバーコート層と、がこの順で積層されたガスバリア積層体を少なくとも備える包装袋であって、紙基材の質量が、包装材の全質量に対して50質量%以上であり、蒸着層が、金属又は金属酸化物を含み、オーバーコート層が、カルボン酸塩基を有するポリオレフィンを含み、オーバーコート層の厚さが3 μm 超である。



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DESCRIPTION

Title of Invention

PACKAGING MATERIAL FOR AQUEOUS CONTENT AND
5 PACKAGING BAG FOR AQUEOUS CONTENT

Technical Field

[0001] The present disclosure relates to a packaging material for an aqueous content and a packaging bag for an aqueous content.

Background Art

10 [0002] In many field of food, beverages, pharmaceuticals, chemicals and the like, packaging bags suitable for different contents are in use. Recently, there has been a demand for reducing the amount of plastic materials that are used for packaging bags due to the growing environmental awareness, and studies have been made to use paper
15 instead of plastic materials. For example, Patent Literature 1 below discloses a gas barrier laminate having a barrier layer laminated on paper.

Citation List

Patent Literature

20 [0003] [Patent Literature 1] Japanese Unexamined Patent Publication No. 2020-69783

Summary of Invention

Technical Problem

[0004] Paper has crease retention (also referred to as dead-holdability)
25 and is thus easy to process. However, in a packaging bag with a crease, the moisture barrier property is likely to deteriorate in the

vicinity of the crease. Therefore, particularly in a case where a packaging bag accommodates an aqueous content, there is a demand for improvement in the moisture barrier property after bending.

5 [0005] One aspect of the present disclosure has been made in consideration of the above-described circumstance, and an objective of the present disclosure is to provide a packaging material and a packaging bag that have an excellent moisture barrier property even after being bent while reducing the amount of plastic materials used.

Solution to Problem

10 [0006] One aspect of the present disclosure is a packaging material including at least a gas barrier laminate having a paper base material, an anchor coat layer, a vapor-deposited layer and an overcoat layer laminated in this order, in which a mass of the paper base material is 50 mass% or more relative to a total mass of the gas barrier laminate, the
15 vapor-deposited layer contains a metal or a metal oxide, the overcoat layer contains a polyolefin having a carboxylic acid base, and the overcoat layer has a thickness of more than 3 μm .

[0007] In the packaging material for an aqueous content, the anchor coat layer may contain a polyolefin having a carboxylic acid base.

20 [0008] In the packaging material for an aqueous content, a ratio of the thickness of the overcoat layer to a thickness of the anchor coat layer may be 1 to 20.

[0009] In the packaging material for an aqueous content, a sealant layer may be further provided on a side of the overcoat layer opposite to the
25 vapor-deposited layer.

[0010] Another aspect of the present disclosure provides a packaging bag for an aqueous content obtained by making the packaging material for an aqueous content into a bag.

Advantageous Effects of Invention

5 [0011] According to one aspect of the present disclosure, it is possible to provide a packaging material and a packaging bag that have an excellent moisture barrier property even after being bent while reducing the amount of plastic materials used.

Brief Description of Drawings

10 [0012] FIG. 1 is a schematic cross-sectional view showing a packaging material according to one embodiment of the present disclosure.

FIG. 2 is a schematic cross-sectional view showing a packaging material according to one embodiment of the present disclosure.

15 FIG. 3 is a perspective view showing a packaging bag according to one embodiment of the present disclosure.

Description of Embodiments

[0013] Hereinafter, one embodiment of the present disclosure will be described in detail with reference to drawings depending on the case. However, the present disclosure is not limited to the following
20 embodiment.

[0014] <Packaging material>

FIG. 1 is a schematic cross-sectional view showing a packaging material according to one embodiment. A packaging material 20 according to one embodiment is composed of a gas barrier laminate 10 having a paper base material 1, an anchor coat layer 2, a vapor-deposited layer 3 and an overcoat layer 4 laminated in this order.
25

[0015] [Paper base material]

The paper base material 1 is not particularly limited and is selected as appropriate depending on the use of a packaging bag to which the gas barrier laminate 10 is applied. The paper base material 1 may be paper containing a plant-derived pulp as a main component. Specific examples of the paper base material 1 include high-quality paper, special-quality paper, coated paper, art paper, cast coated paper, vellum paper, kraft paper and glassine paper. The thickness of the paper base material 1 may be, for example, 20 to 500 g/m² or 30 to 100 g/m². The thickness of the paper base material 1 may be, for example, 20 to 100 μm or 30 to 70 μm.

[0016] The paper base material 1 may be provided with a coat layer (not shown) on a side that comes into contact with the anchor coat layer 2, which will be described below. The coat layer provided on the side of the paper base material 1 that comes into contact with the anchor coat layer 2 makes it possible to prevent the anchor coat layer 2 from infiltrating into the paper base material 1. In addition, when the coat layer is provided on the side of the paper base material 1 that comes into contact with the anchor coat layer 2, the coat layer plays a role of a filler that fills in the unevenness on the surface of the paper base material 1, and it is possible to uniformly form the anchor coat layer 2 with no defects. The coat layer may contain, for example, a variety of copolymers such as a styrene/butadiene-based copolymer, a styrene/acrylic copolymer and an ethylene/vinyl acetate-based copolymer; a polyvinyl alcohol-based resin, a cellulose-based resin,

paraffin (wax) or the like as a binder resin and may contain clay, kaolin, calcium carbonate, talc, mica or the like as a filling material.

[0017] The thickness of the coat layer may be, for example, 1 to 10 μm or 3 to 8 μm .

5 [0018] The mass of the paper base material 1 is 50 mass% or more relative to the total mass of the packaging material 20. When the mass of the paper base material 1 is 50 mass% or more relative to the total mass of the packaging material 20, it is possible to sufficiently reduce the amount of plastic materials used. Such a packaging material 20
10 has excellent recyclability. The mass of the paper base material 1 may be 60 mass% or more, 70 mass% or more or 75 mass% or more relative to the total mass of the packaging material 20 from the viewpoint of further reducing the amount of plastic materials used.

[0019] [Anchor coat layer]

15 The anchor coat layer 2 is provided on a surface of the paper base material and is a layer provided for improvement in the adhesion between the paper base material 1 and the vapor-deposited layer 3 or improvement in the moisture barrier property of the gas barrier laminate
20 10. The anchor coat layer 2 may contain a polyolefin having a carboxylic acid base (a group obtained by substituting a hydrogen atom of a carboxyl group with a metal atom such as a sodium atom). Such an anchor coat layer 2 has excellent flexibility, is capable of curbing the cracking of the vapor-deposited layer after being flexed (after being bent) and is capable of improving the adhesion between the anchor coat
25 layer 2 and the vapor-deposited layer 3. The anchor coat layer 2 contains the polyolefin having a carboxylic acid base and thereby

becomes a dense film due to the crystallinity of the polyolefin. In addition, the anchor coat layer 2 contains the polyolefin having a carboxylic acid base and thereby makes the gas barrier property of the packaging material superior.

5 [0020] The polyolefin having a carboxylic acid base may be a salt of a copolymer of an olefin such as ethylene or propylene and an unsaturated carboxylic acid (an unsaturated compound having a carboxyl group such as acrylic acid, methacrylic acid or a maleic anhydride). Examples of the salt include a sodium salt, a potassium salt and the like.

10 [0021] The anchor coat layer 2 may contain, in addition to the polyolefin having a carboxylic acid base, for example, a polyolefin other than the polyolefin having a carboxylic acid base, a silane coupling agent, an organic titanate, polyacrylic, polyester, polyurethane, polycarbonate, polyurea, polyamide, polyimide, melamine, phenol or
15 the like.

[0022] The content of the polyolefin having a carboxylic acid base in the anchor coat layer 2 may be 50 mass% or more, 60 mass% or more, 70 mass% or more, 80 mass% or more, 90 mass% or more, 95 mass% or more or 100 mass% relative to the total mass of the anchor coat layer
20 2 from the viewpoint of the superior moisture barrier property of the packaging material.

[0023] The thickness of the anchor coat layer 2 may be, for example, 1 μm or more or 2 μm or more and may be 20 μm or less, 10 μm or less or 5 μm or less. When the thickness of the anchor coat layer 2 is 1 μm
25 or more, it is easy to fill the unevenness on the surface of the paper base material 1, and it is possible to uniformly laminate the vapor-deposited

layer 3. In addition, when the thickness of the anchor coat layer 2 is 20 μm or less, the thickness of the anchor coat layer 2 does not become too thick, it is less likely for cracks to be generated in the vapor-deposited layer on the anchor coat layer 2 due to flexing, and the moisture barrier property is less likely to deteriorate after the packaging material is bent. Therefore, the water resistance after the bending of the packaging material is excellent, and it is possible to uniformly laminate the vapor-deposited layer 3 while curbing the cost. Furthermore, when the thickness of the anchor coat layer is 20 μm or less, the amount of a coating liquid that is used to form the anchor coat layer 2 applied to the paper base material is prevented from becoming too large. Therefore, the coating suitability is excellent, and disadvantages such as the deterioration of the flatness of the coated surface and the generation of wrinkles on the base material can be curbed. In addition, since it is possible to curb the deterioration of the flatness of the coated surface, it is possible to curb the deterioration of the barrier property due to the failure of the vapor-deposited layer 3 being uniformly laminated, the generation of cracks from nonuniform places as starting points during bending due to the vapor-deposited layer 3 becoming nonuniform and the deterioration of the barrier property after bending due to the generation of the cracks.

[0024] Examples of a solvent that is contained in the coating liquid of the anchor coat layer 2 include water, methyl alcohol, ethyl alcohol, isopropyl alcohol, n-propyl alcohol, n-butyl alcohol, n-pentyl alcohol, dimethyl sulfoxide, dimethylformamide, dimethylacetamide, toluene, hexane, heptane, cyclohexane, acetone, methyl ethyl ketone, diethyl

ether, dioxane, tetrahydrofuran, ethyl acetate and butyl acetate. One of these solvents may be used singly or two or more thereof may be jointly used. The solvent that is contained in the coating liquid of the anchor coat layer 2 may contain at least one selected from the group consisting of methyl alcohol, ethyl alcohol, isopropyl alcohol, toluene, ethyl acetate, methyl ethyl ketone and water from the viewpoint of the features. The solvent that is contained in the coating liquid of the anchor coat layer 2 may contain at least one selected from the group consisting of methyl alcohol, ethyl alcohol, isopropyl alcohol and water from the viewpoint of reducing the environmental load.

[0025] The anchor coat layer 2 can be laminated on the paper base material 1 by, for example, applying and drying the coating liquid containing the polyolefin having a carboxylic acid base and the solvent to and on the paper base material 1. The average particle diameter of the polyolefin having a carboxylic acid base in the coating liquid may be 1 μm or less, 0.7 μm or less or 0.5 μm or less from the viewpoint of making the dried coated surface flat, uniformly laminating the vapor-deposited layer 3 and improving the barrier property.

[0026] [Vapor-deposited layer]

The vapor-deposited layer 3 is a layer obtained by vapor-depositing a metal or a metal oxide. The vapor-deposited layer 3 may be a layer obtained by vapor-depositing aluminum or may contain aluminum oxide (AlO_x), silicon oxide (SiO_x) or the like.

[0027] The vapor-deposited layer 3 present between the anchor coat layer 2 and the overcoat layer 4 makes it possible to obtain a packaging material having a superior moisture barrier property. The

vapor-deposited layer 3 is a dense film compared with resin layers, and in a state where pin holes are excluded, the intervals between atoms are smaller than water molecules. Therefore, when the packaging material 20 has the vapor-deposited layer 3, the packaging material 20 is excellent in term of not only the resistance to water, which is a liquid, (moisture barrier property) but also the resistance to water vapor (gas barrier property).

[0028] The thickness of the vapor-deposited layer 3 may be, for example, 10 to 300 nm or 30 to 100 nm. When the thickness of the vapor-deposited layer 3 is 10 nm or more, it becomes easy to uniformly form the vapor-deposited layer 3. When the thickness of the vapor-deposited layer 3 is 300 nm or less, it is possible to sufficiently curb the curling of the vapor-deposited layer 3 and the generation of cracks in the vapor-deposited layer 3, and the vapor-deposited layer 3 is likely to have a sufficient gas barrier property and sufficient flexibility.

[0029] The vapor-deposited layer 3 can be formed by a vacuum vapor deposition method, a sputtering method, a chemical vapor deposition method (CVD method) or the like. The vapor-deposited layer 3 is preferably formed by vacuum film formation means from the viewpoint of the gas barrier property and the uniformity of the film. The vapor-deposited layer 3 may be a vacuum vapor deposition method since the film formation rate is fast and the productivity is high. As the vacuum vapor deposition method, film formation means by electron beam heating is preferable since the firm formation rate is easily controlled by the irradiation area, the electron beam current or the like

and the temperature of a vapor deposition material can be increased and decreased within a short period of time.

[0030] [Overcoat layer]

5 The overcoat layer 4 is a layer that is provided on the surface of the vapor-deposited layer 3 so as to be in contact with the vapor-deposited layer 3 and contains a polyolefin having a carboxylic acid base. The overcoat layer 4 contains a polyolefin having a carboxylic acid base, whereby the packaging material 20 has an excellent moisture barrier property even after being bent. Examples of
10 the polyolefin having a carboxylic acid base include the above-described polyolefins having a carboxylic acid base that are contained in the anchor coat layer 2. The polyolefin having a carboxylic acid base that is contained in the overcoat layer 4 may be different from the polyolefin having a carboxylic acid base that is
15 contained in the anchor coat layer 2 or may be the same as that from the viewpoint of ease of manufacturing.

[0031] The overcoat layer 4 contains the polyolefin having a carboxylic acid base and thereby has excellent flexibility, is capable of curbing the cracking of the vapor-deposited layer 3 after being flexed (after being
20 bent) and is capable of improving the adhesion between the overcoat layer 4 and the vapor-deposited layer 3. The overcoat layer 4 contains the polyolefin having a carboxylic acid base and thereby becomes a dense film due to the crystallinity of the polyolefin. In addition, the overcoat layer 4 contains the polyolefin having a carboxylic acid base
25 and is thereby also capable of playing a role of a heat sealing layer,

which makes it possible to make a bag without providing a heat sealing layer.

[0032] The overcoat layer 4 may contain, in addition to the polyolefin having a carboxylic acid base, for example, a coupling agent such as a silane coupling agent; a resin such as polyacrylic, polyester, polyurethane, polycarbonate, polyurea, polyamide, a polyolefin-based emulsion, polyimide, melamine or phenol; an organic titanate or the like.

[0033] The content of the polyolefin having a carboxylic acid base in the overcoat layer 4 may be 50 mass% or more, 60 mass% or more, 70 mass% or more, 80 mass% or more, 90 mass% or more, 95 mass% or more or 100 mass% relative to the total mass of the overcoat layer 4 from the viewpoint of the superior moisture barrier property of the packaging material.

[0034] The thickness of the overcoat layer 4 is more than 3 μm . The thickness of the overcoat layer 4 being more than 3 μm makes the packaging material 20 have an excellent moisture barrier property even after being bent. The thickness of the overcoat layer 4 may be 3.5 μm or more, 4 μm or more, 4.5 μm or more or 5 μm or more. As the thickness of the overcoat layer 4 becomes thicker, the ratio of the paper base material decreases, and the recyclability thus deteriorates. Therefore, the thickness of the overcoat layer 4 may be 20 μm or less, less than 20 μm , 18 μm or less, 16 μm or less, 15 μm or less, 14 μm or less, 13 μm or less or 12 μm or less from the viewpoint of maintaining the recyclability, making the adhesion to the vapor-deposited layer 3 excellent while curbing the cost and enabling the moisture barrier

property to be sufficiently exhibited. The thickness of the overcoat layer 4 may be 10 μm or less, 8 μm or less, 6 μm or less or 5 μm or less.

[0035] Examples of a solvent that is contained in a coating liquid of the overcoat layer 4 include water, methyl alcohol, ethyl alcohol, isopropyl alcohol, n-propyl alcohol, n-butyl alcohol, n-pentyl alcohol, dimethyl sulfoxide, dimethylformamide, dimethylacetamide, toluene, hexane, heptane, cyclohexane, acetone, methyl ethyl ketone, diethyl ether, dioxane, tetrahydrofuran, ethyl acetate and butyl acetate. One of these solvents may be used singly or two or more thereof may be jointly used.

The solvent that is contained in the coating liquid of the anchor coat layer 2 may be contain at least one selected from the group consisting of methyl alcohol, ethyl alcohol, isopropyl alcohol, toluene, ethyl acetate, methyl ethyl ketone and water from the viewpoint of the features. The solvent that is contained in the coating liquid of the anchor coat layer 2 may contain at least one selected from the group consisting of methyl alcohol, ethyl alcohol, isopropyl alcohol and water from the viewpoint of reducing the environmental load.

[0036] The overcoat layer 4 can be laminated on the vapor-deposited layer 3 by, for example, applying and drying the coating liquid containing the polyolefin having a carboxylic acid base and the solvent to and on the vapor-deposited layer 3. The average particle diameter of the polyolefin having a carboxylic acid base in the coating liquid may be 1 μm or less, 0.7 μm or less or 0.5 μm or less from the viewpoint of preventing blocking during the transportation of the packaging material by increasing the rising temperature during heat sealing.

[0037] The ratio of the thickness of the overcoat layer 4 to the thickness of the anchor coat layer 2 (the thickness of the overcoat layer 4/the thickness of the anchor coat layer 2) may be 1 or more, 1.5 or more or 1.8 or more from the viewpoint of the flexing resistance. The ratio of the thickness of the overcoat layer 4 to the thickness of the anchor coat layer 2 may be 30 or less, 25 or less, 20 or less, 15 or less, 10 or less, 8 or less, 6 or less, 5 or less or 4 or less from the viewpoint of the coatability and the recyclability.

[0038] The total thickness of the anchor coat layer 2 and the overcoat layer 4 is preferably 50 μm or less, 40 μm or less, 30 μm or less, 25 μm or less, 21 μm or less, 20 μm or less, 18 μm or less, 15 μm or less or 12 μm or less from the viewpoint of making the recyclability superior by decreasing the amount of a resin material used relative to the paper base material.

[0039] FIG. 2 is a schematic cross-sectional view showing a packaging material according to another embodiment. A packaging material 30 shown in FIG. 2 includes the gas barrier laminate 10 and a sealant layer 21 that is laminated on the gas barrier laminate 10, and the overcoat layer 4 of the gas barrier laminate 10 and the sealant layer 21 are in contact with each other through an adhesive layer 22. In other words, the packaging material 30 includes the sealant layer 21 on a side of the overcoat layer 4 opposite to the vapor-deposited layer 3.

[0040] The material of the sealant layer 21 may be a polyolefin to make the packaging material 30 a mono-material packaging material. The material of the sealant layer 21 may be polypropylene like a base

material layer of the packaging material. The sealant layer 21 may be, for example, a stretched or unstretched polypropylene film.

[0041] The thickness of the sealant layer 21 may be, for example, 15 μm or more and may be 200 μm or less or 100 μm or less.

5 [0042] The adhesive layer 22 makes the gas barrier laminate 10 and the sealant layer 21 adhere to each other. Examples of an adhesive that configures the adhesive layer 22 include polyurethane resins obtained by making a bi- or higher-functional isocyanate compound act on a main agent such as polyester polyol, polyether polyol, acrylic polyol or
10 carbonate polyol and the like. One of a variety of polyols may be used singly or two or more thereof may be jointly used. The adhesive layer 22 may be obtained by blending a carbodiimide compound, an oxazoline compound, an epoxy compound, a phosphorus compound, a silane coupling agent or the like with the above-described polyurethane
15 resin for the purpose of adhesion promotion. The thickness of the adhesive layer may be, for example, 0.5 to 10 g/m^2 from the viewpoint of obtaining desired adhesive strength, followability, workability and the like. In the adhesive layer 22, a biomass-derived polymer or a biodegradable polymer may be used as a polymer component from the
20 viewpoint of environmental consideration. In addition, an adhesive having a barrier property may be used in the adhesive layer 22.

[0043] The Cobb 300 value (initial) of the packaging material may be 0.3 g/m^2 or less, 0.2 g/m^2 or less or 0.1 g/m^2 or less from the viewpoint of an excellent moisture barrier property. The Cobb 300 value (initial)
25 means a Cobb 300 value measured at a portion other than the bent

portions of the packaging material and is measured by a method to be described in the following examples.

[0044] <Packaging bag>

FIG. 3 is a perspective view showing a gusset bag 40 composed of the gas barrier laminate 10 (packaging material 20). A packaging bag is manufactured by sealing an opening portion in the upper part of the gusset bag 40. The gusset bag 40 has places where the gas barrier laminate 10 has been bent (bent portions B1 and B2). The bent portions B1 are places where the gas barrier laminate 10 has been valley-folded when seen from the innermost layer side, and on the other hand, the bent portions B2 are places where the gas barrier laminate 10 has been mountain-folded when seen from the innermost layer side.

[0045] The packaging bag may be provided with a bag shape by folding one gas barrier laminate in half so that the overcoat layer 4 faces each other, then, appropriately bending the gas barrier laminate into a desired shape and heat-sealing the gas barrier laminate or may be provided with a bag shape by overlapping two gas barrier laminates so that the overcoat layers 4 face each other and then heat-sealing the gas barrier laminates.

[0046] The packaging bag accommodates an aqueous content. In the present specification, the aqueous content means a content containing at least water. The packaging bag according to the present embodiment has an excellent moisture barrier property while having a shape with the bent portions and is capable of sufficiently curbing the seeping of the aqueous content.

[0047] In the present embodiment, the gusset bag had been described as one example of the packaging bag; however, for example, a pillow bag, a three-side seal bag or a standing pouch may be produced using the packaging material according to the present embodiment.

5 [0048] The present disclosure includes, for example, the following [1] to [5].

[1] A packaging material for an aqueous content, including at least a gas barrier laminate having a paper base material, an anchor coat layer, a vapor-deposited layer and an overcoat layer laminated in this
10 order, in which

a mass of the paper base material is 50 mass% or more relative to a total mass of the packaging material,

the vapor-deposited layer contains a metal or a metal oxide,

15 the overcoat layer contains a polyolefin having a carboxylic acid base, and

the overcoat layer has a thickness of more than 3 μm .

[2] The packaging material for an aqueous content according to [1], in which the anchor coat layer contains a polyolefin having a carboxylic acid base.

20 [3] The packaging material for an aqueous content according to [1] or [2], in which a ratio of the thickness of the overcoat layer to a thickness of the anchor coat layer is 1 to 20.

[4] The packaging material for an aqueous content according to any one of [1] to [3], further including a sealant layer provided on a side
25 of the overcoat layer opposite to the vapor-deposited layer.

[5] A packaging bag for an aqueous content obtained by making the packaging material for an aqueous content according to any one of [1] to [4] into a bag.

[Examples]

5 [0049] Hereinafter, the present disclosure will be described in more detail using examples, but the present disclosure is not limited to these examples.

[0050] <Production of gas barrier laminate>

(Example 1)

10 A coating liquid containing a polyolefin having a carboxylic acid base (trade name: CHEMIPEARL S100, ionomer-based, average particle diameter: $< 0.1 \mu\text{m}$, solvent: water and IPA, manufactured by Mitsui Chemicals, Inc.) was applied onto a surface of a paper base material (coated paper, thickness of paper: $55 \mu\text{m}$, 60 g/m^2 , thickness of
15 clay coated layer: $5 \mu\text{m}$) on the clay coated layer side with a bar coater and dried in an oven, thereby forming an anchor coat layer. The thickness of the anchor coat layer was $2 \mu\text{m}$. Next, AL vapor deposition was performed on the anchor coat layer by a vacuum vapor deposition method to form a vapor-deposited layer. The thickness of
20 the vapor-deposited layer was $50 \mu\text{m}$. Next, a solution containing a polyolefin having a carboxylic acid base (trade name: CHEMIPEARL S100, ionomer-based, average particle diameter: less than $0.1 \mu\text{m}$, solvent: water and IPA, manufactured by Mitsui Chemicals, Inc.) was applied onto the vapor-deposited layer with the bar coater and dried in
25 the oven to form an overcoat layer, thereby obtaining a gas packaging

material. The thickness of the overcoat layer was 5 μm . The content of the paper base material in the packaging material was 82 mass%.

[0051] (Example 2)

5 A packaging material was obtained by the same operation as in Example 1 except that the thickness of the overcoat layer was set to 10 μm . The content of the paper base material in the packaging material was 76 mass%.

[0052] (Example 3)

10 A packaging material was obtained by the same operation as in Example 1 except that the thickness of the anchor coat layer was set to 3 μm and the thickness of the overcoat layer was set to 12 μm . The content of the paper base material in the packaging material was 73 mass%.

[0053] (Example 4)

15 A packaging material was obtained by the same operation as in Example 1 except that the thickness of the overcoat layer was set to 3.5 μm . The content of the paper base material in the packaging material was 84 mass%.

[0054] (Example 5)

20 A packaging material was obtained by the same operation as in Example 1 except that the thickness of the anchor coat layer was set to 1 μm and the thickness of the overcoat layer was set to 20 μm . The content of the paper base material in the packaging material was 68 mass%.

25 [0055] (Comparative Example 1)

A packaging material was obtained by the same operation as in Example 1 except that the thickness of the overcoat layer was set to 0.5 μm . The content of the paper base material in the packaging material was 88 mass%.

5 [0056] (Comparative Example 2)

A packaging material was obtained by the same operation as in Example 1 except that the thickness of the overcoat layer was set to 2 μm . The content of the paper base material in the packaging material was 86 mass%.

10 [0057] (Comparative Example 3)

A packaging material was obtained by the same operation as in Example 1 except that a urethane curing-type acrylic resin that was a cured product of acrylic polyol (the acrylic polyol is a polymer of acrylic acid derivative monomers or a polymer of an acrylic acid derivative monomer and a different monomer and has a hydroxyl group at the terminal) and polyisocyanate was used for the anchor coat layer, the thickness of the anchor coat layer was set to 3 μm , the overcoat layer was formed of a mixture of PVA and a hydrolysate of TEOS and the thickness of the overcoat layer was set to 3.5 μm . The content of the paper base material in the packaging material was 85 mass%.

15 [0058] (Comparative Example 4)

Sodium polyacrylate was added as a dispersant to a pigment (engineered kaolin, Imerys S.A., BARRISURF HX, average particle diameter: 9.0 μm , aspect ratio: 80 to 100) (0.2% relative to the pigment) and dispersed with a Serie mixer to prepare a kaolin slurry having a solid content concentration of 55%. Styrene/butadiene-based latex

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(manufactured by ZEON Corporation, PNT7868) was blended as a water vapor barrier resin with the obtained kaolin slurry so that the amount of the latex reached 100 parts (solid content) relative to 100 parts (solid content) of the pigment, thereby obtaining a coating liquid for forming an anchor coat layer having a solid content concentration of 50%.

[0059] Sodium polyacrylate was added as a dispersant to a pigment (engineered kaolin, Imerys S.A., BARRISURF HX, average particle diameter: 9.0 μm , aspect ratio: 80 to 100) (0.2% relative to the pigment) and dispersed with the Serie mixer to prepare a kaolin slurry having a solid content concentration of 55%. A polyvinyl alcohol (manufactured by Kuraray Co., Ltd., PVA117) aqueous solution was prepared so that the solid content concentration reached 10%, and a PVA aqueous solution was obtained. The obtained kaolin slurry and the PVA aqueous solution were mixed together in a ratio of the pigment to the PVA aqueous solution of 100/100 in terms of the solid content so that the solid content concentration reached 10%, thereby obtaining a coating liquid for forming an overcoat layer.

[0060] The coating liquid for forming an anchor coat layer was applied to a single surface of paper base paper (kraft paper, thickness of paper: 55 g/m^2) using a blade coater so that the coating amount reached 12 g/m^2 (thickness of anchor coat layer: 12 μm) in terms of the dry mass and dried, and the coating liquid for forming an overcoat layer was then applied onto a single surface of the dried coating liquid for forming an anchor coat layer using a roll coater so that the coating amount reached 3.0 g/m^2 (thickness of overcoat layer: 3 μm) in terms of the dry mass

and dried, thereby obtaining a packaging material. The content of the paper base material in the packaging material was 79 mass%.

[0061] <Cobb water absorbency evaluation (initial)>

5 According to JIS-P8140: 1998, a measurement sample was placed with a surface on the overcoat layer side relative to the paper base material facing upward, and a metal cylinder having a circular cross section and a cross-sectional area of 100 cm² was installed thereon so that the measurement sample and the cylinder adhered together. Next, 100 ml ± 5 ml of distilled water was poured into the cylinder so
10 that the water depth on the measurement sample reached 10 mm. A point in time where the distilled water was completely poured thereinto was regarded as zero seconds, and the distilled water were removed together with the cylinder after 300 seconds. Water-absorbing paper was placed on the measurement sample, a flat metal roller having a
15 width of 200 mm, a diameter of 90 mm and a weight of 10 kg was caused to reciprocate once on the water-absorbing paper, and surplus water remaining on the measurement sample after the water absorption was wiped off. The Cobb 300 value (g/m²) after a water absorption time of 300 seconds was calculated from the mass difference (g) before
20 and after the water absorption by mass difference × 100.

[0062] <Cobb water absorbency evaluation (after bending)>

The surface of the measurement sample on the overcoat layer side relative to the paper base material was bent 180 degrees outwards without making any creases, and a 3 kg roller was rolled once in a
25 single direction to make a crease. Next, the measurement sample was spread while preventing a surplus force from being applied to the crease

and disposed so that the crease passed through the center of the cross section of the cylinder, and the Cobb 300 value after the bending was calculated by the same method as for the above-described Cobb water absorbency evaluation (initial).

5 [0063] <Recyclability>

The recyclability of the packaging material was evaluated. The recyclability of the packaging material was evaluated from the content of the paper base material in the packaging material. The evaluation results are shown in Table 1.

10 S: The content of the paper base material in the packaging material is 80 mass% or more.

A: The content of the paper base material in the packaging material is 70 mass% or more and less than 80 mass%.

15 B: The content of the paper base material in the packaging material is 50 mass% or more and less than 70 mass%.

C: The content of the paper base material in the packaging material is less than 50 mass%.

[0064] [Table 1]

		Example 1	Example 2	Example 3	Example 4	Example 5	Comparative Example 1	Comparative Example 2	Comparative Example 3	Comparative Example 4	
Thickness of anchor coat layer (AC layer) (μm)		2	2	3	2	1	2	2	3	12	
Thickness of overcoat layer (OC layer) (μm)		5	10	12	3.5	20	0.5	2	3.5	3	
Total thickness of AC layer and OC layer (μm)		7	12	15	5.5	21	2.5	4	6.5	15	
Ratio of thickness (OC layer/AC layer)		2.5	5	4	1.8	20	0.3	1	1.2	0.3	
Paper percent (%)		82	76	73	84	68	88	86	85	79	
Evaluation	Cobb 300 value (g/m^2)	Initial	0.2	0.1	0.1	0.1	0.1	0.2	0.2	0.1	7.3
		After bending	0.2	0.2	0.1	0.1	0.1	0.6	0.4	0.8	24.1
Recyclability		S	A	A	S	B	S	S	S	A	

Reference Signs List

[0065] 1 ... Paper base material, 2 ... anchor coat layer, 3 ... vapor-deposited layer, 4 ... overcoat layer, 10 ... gas barrier laminate, 20, 30 ... packaging material, 40 ... gusset bag, B1, B2 ... bent portion.

CLAIMS

[Claim 1]

A packaging material for an aqueous content, comprising:

5 at least a gas barrier laminate having a paper base material, an anchor coat layer, a vapor-deposited layer and an overcoat layer laminated in this order,

wherein a mass of the paper base material is 50 mass% or more relative to a total mass of the packaging material,

the vapor-deposited layer comprises a metal or a metal oxide,

10 the overcoat layer comprises a polyolefin having a carboxylic acid base, and

the overcoat layer has a thickness of more than 3 μm .

[Claim 2]

15 The packaging material for an aqueous content according to Claim 1,

wherein the anchor coat layer comprises a polyolefin having a carboxylic acid base.

[Claim 3]

20 The packaging material for an aqueous content according to Claim 1,

wherein a ratio of the thickness of the overcoat layer to a thickness of the anchor coat layer is 1 to 20.

[Claim 4]

25 The packaging material for an aqueous content according to Claim 1, further comprising:

a sealant layer provided on a side of the overcoat layer opposite to the vapor-deposited layer.

[Claim 5]

5 A packaging bag for an aqueous content obtained by making the packaging material for an aqueous content according to any one of Claims 1 to 4 into a bag.

Fig.1

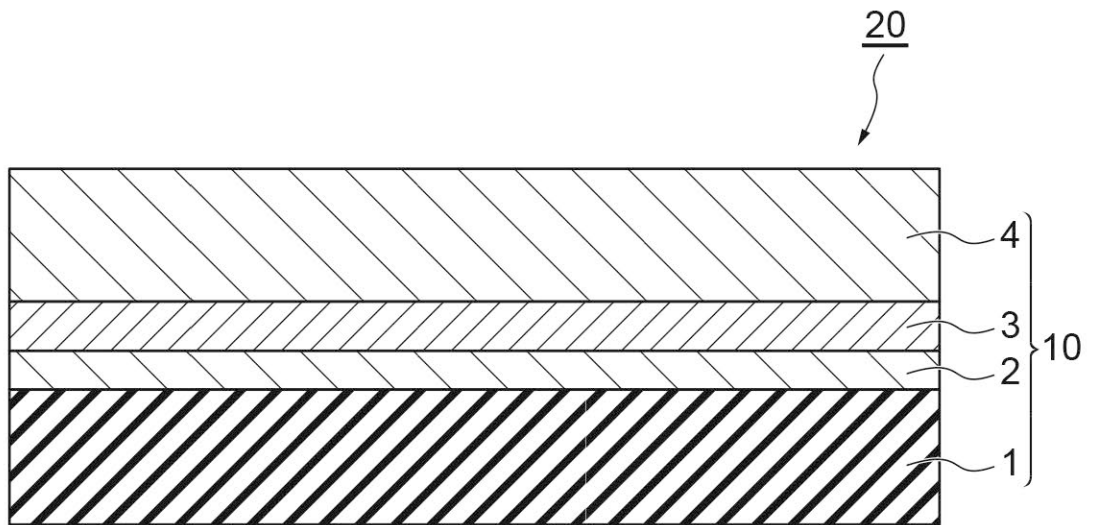


Fig.2

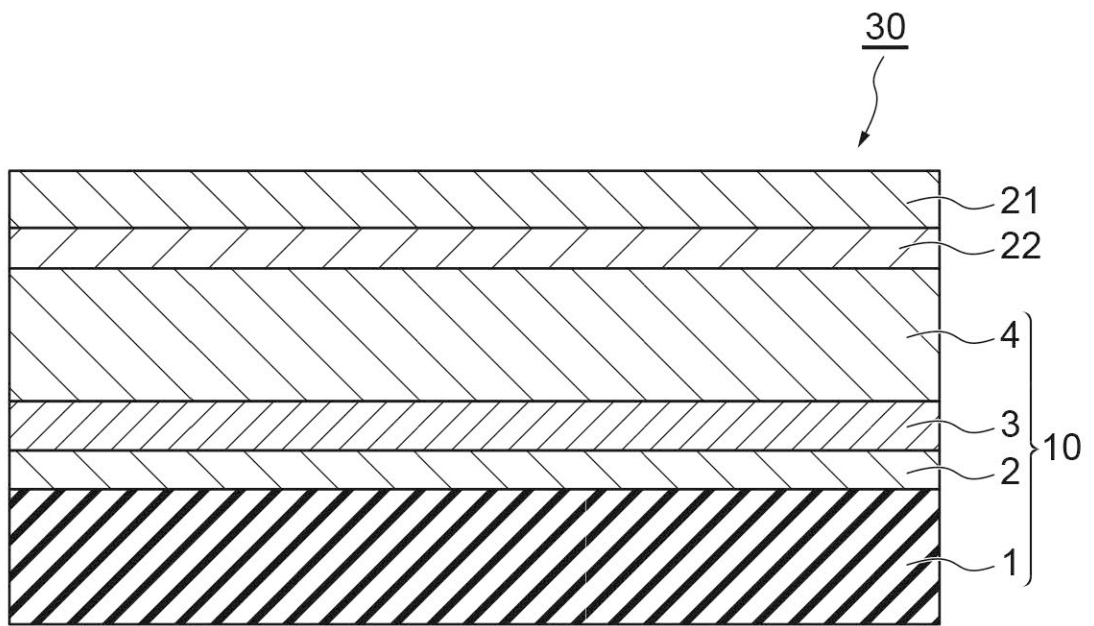


Fig.3

