CLAIMS

1. An ethylene-vinyl alcohol copolymer resin composition, comprising:
an ethylene-vinyl alcohol copolymer (A);
acetic acid and/or a salt thereof (B);
an aliphatic carboxylic acid (C) other than acetic acid; and
an aliphatic carboxylic acid metal salt (D) that is a metal salt of the aliphatic carboxylic acid (C),
wherein a metal species of the aliphatic carboxylic acid metal salt (D) is at least one selected from long Periodic Table 4th-period d-block elements, and
wherein respective contents of the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D) satisfy the following formulae (1) and (2) on a weight basis:
$0.001 \leq$ (content of (D) in terms of metal ion/content of (B) in terms of acetic acid ion) $\leq 1.30 \cdots (1)$
$0.11 \leq$ (content of (D) in terms of metal ion/content of (C) in terms of carboxylic acid ion) $\leq 100 \cdots (2)$.

2. The ethylene-vinyl alcohol copolymer resin composition according to claim 1, wherein the content of the aliphatic carboxylic acid metal salt (D) in terms of metal ion is from 1 ppm to 500 ppm on a weight basis with respect to a total sum of contents of the ethylene-vinyl alcohol copolymer (A), the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D).

3. The ethylene-vinyl alcohol copolymer resin composition according to claim 1 or 2, wherein the content of the aliphatic carboxylic acid (C) in terms of carboxylic acid ion is from 0.001 ppm to 450 ppm on a weight basis with respect to a total sum of contents of the ethylene-vinyl alcohol copolymer (A), the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D).

4. The ethylene-vinyl alcohol copolymer resin composition according to any one of claims 1 to 3, wherein the content of the acetic acid and/or the salt thereof (B) in terms of acetic acid ion is from 10 ppm to 2,000 ppm on a weight basis with respect to a total sum of contents of the ethylene-vinyl alcohol copolymer (A), the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D).

5. The ethylene-vinyl alcohol copolymer resin composition according to any one of claims 1 to 4, wherein a ratio (content of acetic acid and/or salt thereof (B) in terms of acetic acid ion/content of aliphatic carboxylic acid (C) in terms of carboxylic acid ion) of the content of the acetic acid and/or the salt thereof (B) in terms of acetic acid ion to the content of the aliphatic carboxylic acid (C) in terms of carboxylic acid ion is from 0.0001 to 10,000 on a weight basis.

~~6. The ethylene-vinyl alcohol copolymer resin composition according to any one of claims 1 to 5, wherein an elongation viscosity of the ethylene-vinyl alcohol copolymer resin composition at 210°C and 100 s^{-1} satisfies the following formula (3):~~

~~500 ≤ elongation viscosity [Pa·s] ≤ 48,000···(3).~~

1~~7~~. An~~The~~ ethylene-vinyl alcohol copolymer resin composition ~~according to any one of claims 1 to 6, further~~ comprising:

an ethylene-vinyl alcohol copolymer (A);

acetic acid and/or a salt thereof (B);

an aliphatic carboxylic acid (C) other than acetic acid;

an aliphatic carboxylic acid metal salt (D) that is a metal salt of the aliphatic carboxylic acid (C); and

– phosphoric acid and/or a salt thereof (E),

wherein a metal species of the aliphatic carboxylic acid metal salt (D) is at least one selected from long Periodic Table 4th-period d-block elements,

wherein respective contents of the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D) satisfy the following formulae (1) and (2) on a weight basis:

0.001 ≤ (content of (D) in terms of metal ion/content of (B) in terms of acetic acid ion) ≤ 1.30···(1)

0.11 ≤ (content of (D) in terms of metal ion/content of (C) in terms of carboxylic acid ion) ≤ 100···(2); and

wherein a content of the phosphoric acid and/or the salt thereof (E) in terms of phosphorus is 900 ppm or less on a weight basis with respect to a total sum of contents of the ethylene-vinyl alcohol copolymer (A), the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), the aliphatic carboxylic acid metal salt (D), and the phosphoric acid and/or the salt thereof (E).

2~~8~~. An~~The~~ ethylene-vinyl alcohol copolymer resin composition ~~according to any one of claims 1 to 7, further~~ comprising:

an ethylene-vinyl alcohol copolymer (A);

acetic acid and/or a salt thereof (B);

an aliphatic carboxylic acid (C) other than acetic acid;

an aliphatic carboxylic acid metal salt (D) that is a metal salt of the aliphatic carboxylic acid (C); and

– boric acid and/or a salt thereof (F),

wherein a metal species of the aliphatic carboxylic acid metal salt (D) is at least one selected from long Periodic Table 4th-period d-block elements,

wherein respective contents of the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D) satisfy the following formulae (1) and (2) on a weight basis:

0.001 ≤ (content of (D) in terms of metal ion/content of (B) in terms of acetic acid ion) ≤ 1.30···(1)

0.11 ≤ (content of (D) in terms of metal ion/content of (C) in terms of carboxylic acid ion) ≤ 100···(2); and

wherein in the ethylene-vinyl alcohol copolymer resin composition a ratio (D)/(F) of the content of the aliphatic carboxylic acid metal salt (D) in terms of metal ion to the content of the boric acid and/or a salt thereof (F) in terms of boron satisfies the following formula (4) on a weight basis:

0.11 ≤ (content of (D) in terms of metal ion/content of (F) in terms of boron) ≤ 100···(4).

39. AnThe ethylene-vinyl alcohol copolymer resin composition according to any one of claims 1 to 8, comprising:

an ethylene-vinyl alcohol copolymer (A);

acetic acid and/or a salt thereof (B);

an aliphatic carboxylic acid (C) other than acetic acid; and

an aliphatic carboxylic acid metal salt (D) that is a metal salt of the aliphatic carboxylic acid (C); and

wherein a metal species of the aliphatic carboxylic acid metal salt (D) is at least one selected from long Periodic Table 4th-period d-block elements,

wherein respective contents of the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D) satisfy the following formulae (1) and (2) on a weight basis:

0.001 ≤ (content of (D) in terms of metal ion/content of (B) in terms of acetic acid ion) ≤ 1.30···(1)

0.11 ≤ (content of (D) in terms of metal ion/content of (C) in terms of carboxylic acid ion) ≤ 100···(2); and

wherein the ethylene-vinyl alcohol copolymer (A) is two or more ethylene-vinyl alcohol copolymers having numerically different ethylene structural unit contents.

410. The ethylene-vinyl alcohol copolymer resin composition according to claim 39, wherein the ethylene-vinyl alcohol copolymer having a highest ethylene structural unit content and the ethylene-vinyl alcohol copolymer having a lowest ethylene structural unit content in the two or more ethylene-vinyl alcohol copolymers (A) having numerically different ethylene structural unit contents differ from each other in ethylene structural unit content by 3 mol% or more.

511. AnThe ethylene-vinyl alcohol copolymer resin composition according to any one of claims 1 to 10, comprising:

an ethylene-vinyl alcohol copolymer (A);

acetic acid and/or a salt thereof (B);

an aliphatic carboxylic acid (C) other than acetic acid; and

an aliphatic carboxylic acid metal salt (D) that is a metal salt of the aliphatic carboxylic acid (C); and

wherein a metal species of the aliphatic carboxylic acid metal salt (D) is at least one selected from long Periodic Table 4th-period d-block elements,

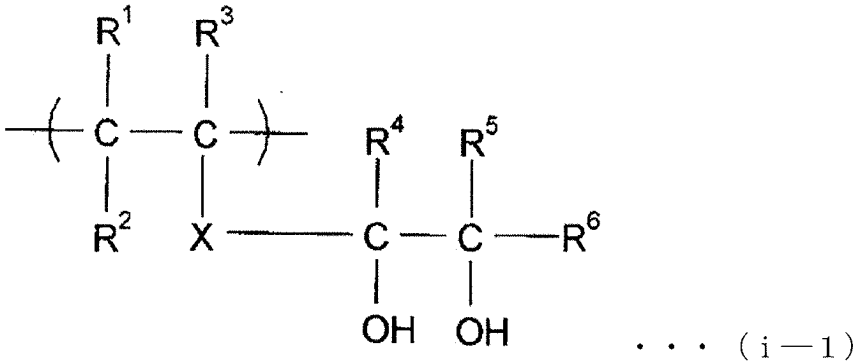
wherein respective contents of the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D) satisfy the following formulae (1) and (2) on a weight basis:

0.001 ≤ (content of (D) in terms of metal ion/content of (B) in terms of acetic acid ion) ≤ 1.30···(1)

0.11 ≤ (content of (D) in terms of metal ion/content of (C) in terms of carboxylic acid ion) ≤ 100···(2); and

wherein the ethylene-vinyl alcohol copolymer (A) is an ethylene-vinyl alcohol copolymer containing a structural unit (i) having a primary hydroxy group in a side chain thereof.

612. The ethylene-vinyl alcohol copolymer resin composition according to claim 511, wherein the structural unit (i) is a structural unit represented by the following general formula (i-1):



· · · (i—1)

where R^1, R^2, and R^3 each independently represent a hydrogen atom or an organic group, X represents a single bond or a bonding chain, and R^4, R^5, and R^6 each independently represent a hydrogen atom or an organic group.

713. AnThe ethylene-vinyl alcohol copolymer resin composition ~~according to any one of claims 1 to 12, further~~ comprising:

an ethylene-vinyl alcohol copolymer (A);

acetic acid and/or a salt thereof (B);

an aliphatic carboxylic acid (C) other than acetic acid;

an aliphatic carboxylic acid metal salt (D) that is a metal salt of the aliphatic carboxylic acid (C); and

cinnamic acid and/or a salt thereof (G),

wherein a metal species of the aliphatic carboxylic acid metal salt (D) is at least one selected from long Periodic Table 4th-period d-block elements,

wherein respective contents of the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D) satisfy the following formulae (1) and (2) on a weight basis:

0.001 ≤ (content of (D) in terms of metal ion/content of (B) in terms of acetic acid ion) ≤ 1.30···(1)

0.11 ≤ (content of (D) in terms of metal ion/content of (C) in terms of carboxylic acid ion) ≤ 100···(2); and

wherein in the ethylene-vinyl alcohol copolymer resin composition a ratio (D)/(G) of the content of the aliphatic carboxylic acid metal salt (D) in terms of metal ion to the content of the cinnamic acid and/or a salt thereof (G) in terms of cinnamic acid ion satisfies the following formula (5) on a weight basis:

0.015 ≤ (content of (D) in terms of metal ion/content of (G) in terms of cinnamic acid ion) ≤ 50···(5).

8~~14~~. An~~The~~ ethylene-vinyl alcohol copolymer resin composition ~~according to any one of claims 1 to 13, further~~ comprising:

an ethylene-vinyl alcohol copolymer (A);

acetic acid and/or a salt thereof (B);

an aliphatic carboxylic acid (C) other than acetic acid;

an aliphatic carboxylic acid metal salt (D) that is a metal salt of the aliphatic carboxylic acid (C);

a styrene thermoplastic elastomer (H) free of any polar group and a styrene thermoplastic elastomer (I) containing a polar group,

wherein a metal species of the aliphatic carboxylic acid metal salt (D) is at least one selected from long Periodic Table 4th-period d-block elements,

wherein respective contents of the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D) satisfy the following formulae (1) and (2) on a weight basis:

0.001 ≤ (content of (D) in terms of metal ion/content of (B) in terms of acetic acid ion) ≤ 1.30···(1)

0.11 ≤ (content of (D) in terms of metal ion/content of (C) in terms of carboxylic acid ion) ≤ 100···(2); and

wherein in the ethylene-vinyl alcohol copolymer resin composition a ratio (I)/(D) of the content of the styrene thermoplastic elastomer (I) containing a polar group to the content of the aliphatic carboxylic acid metal salt (D) in terms of metal ion satisfies the following formula (6) on a weight basis:

30 ≤ (content of (I)/content of (D) in terms of metal ion) ≤ 2,900···(6).

9~~15~~. The ethylene-vinyl alcohol copolymer resin composition according to claim 8~~14~~, wherein the styrene thermoplastic elastomer (H) free of any polar group is a block copolymer having a polymer block (h1) formed of an aromatic vinyl monomer unit, and a polymer block obtained by polymerizing an unsaturated hydrocarbon compound and/or a hydrogenated block thereof (h2), and the styrene thermoplastic elastomer (I) containing the polar group is a modified block copolymer, which has a polymer block (i1) formed of an aromatic vinyl monomer unit, and a polymer block obtained by polymerizing an unsaturated hydrocarbon compound and/or a hydrogenated block thereof (i2), and contains the polar group.

10. The ethylene-vinyl alcohol copolymer resin composition according to any one of claims 1 to 9, wherein the content of the aliphatic carboxylic acid metal salt (D) in terms of metal ion is from 1 ppm to 500 ppm on a weight basis with respect to a total sum of contents of the ethylene-vinyl alcohol copolymer (A), the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D).

11. The ethylene-vinyl alcohol copolymer resin composition according to any one of claims 1 or 10, wherein the content of the aliphatic carboxylic acid

(C) in terms of carboxylic acid ion is from 0.001 ppm to 450 ppm on a weight basis with respect to a total sum of contents of the ethylene-vinyl alcohol copolymer (A), the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D).

12. The ethylene-vinyl alcohol copolymer resin composition according to any one of claims 1 to 11, wherein the content of the acetic acid and/or the salt thereof (B) in terms of acetic acid ion is from 10 ppm to 2,000 ppm on a weight basis with respect to a total sum of contents of the ethylene-vinyl alcohol copolymer (A), the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D).

13. The ethylene-vinyl alcohol copolymer resin composition according to any one of claims 1 to 12, wherein a ratio (content of acetic acid and/or salt thereof (B) in terms of acetic acid ion/content of aliphatic carboxylic acid (C) in terms of carboxylic acid ion) of the content of the acetic acid and/or the salt thereof (B) in terms of acetic acid ion to the content of the aliphatic carboxylic acid (C) in terms of carboxylic acid ion is from 0.0001 to 10,000 on a weight basis.

14. The ethylene-vinyl alcohol copolymer resin composition according to any one of claims 1 to 13, wherein an elongation viscosity of the ethylene-vinyl alcohol copolymer resin composition at 210°C and 100 s^{-1} satisfies the following formula (3):

$$500 \leq \text{elongation viscosity [Pa·s]} \leq 48{,}000 \cdots (3).$$

15~~16~~. A multilayer structure, comprising:

at least one resin composition layer (α) formed of the resin composition of any one of claims 1 to 1~~4~~5;

at least one adhesive resin layer (β); and

at least one thermoplastic resin layer (δ) formed of a thermoplastic resin other than the resin composition of any one of claims 1 to 1~~4~~5, which is laminated on at least one surface of the resin composition layer (α) with the adhesive resin layer (β) interposed between the resin composition layer (α) and the thermoplastic resin layer (δ).

16~~17~~. The multilayer structure according to claim 1~~5~~6, wherein a ratio "$(\alpha_L)/(\beta_L)$" of from 10/90 to 99/1 and a ratio "$(\alpha_L)/(\delta_L)$" of from 1/99 to 50/50 are satisfied,

where

α_L represents the thickness of the resin composition layer (α) or the thickness of a resin composition layer having the largest thickness among the resin composition layers (α),

β_L represents the thickness of the adhesive resin layer (β) or the thickness of an adhesive resin layer having the largest thickness among the adhesive resin layers (β), and

δ_L represents the thickness of the thermoplastic resin layer (δ) or the

thickness of a thermoplastic resin layer having the largest thickness among the thermoplastic resin layers (δ).

17~~18~~. A multilayer structure, comprising:

at least one resin composition layer (α) formed of the resin composition of any one of claims 1 to 1~~4~~5; and

at least one polyamide layer (γ) laminated on at least one surface of the resin composition layer (α).

18~~19~~. A~~The~~ multilayer structure ~~according to claim 18~~, comprising:

at least one resin composition layer (α) formed of an ethylene-vinyl alcohol copolymer resin composition comprising:

an ethylene-vinyl alcohol copolymer (A);

acetic acid and/or a salt thereof (B);

an aliphatic carboxylic acid (C) other than acetic acid; and

an aliphatic carboxylic acid metal salt (D) that is a metal salt of the aliphatic carboxylic acid (C),

wherein a metal species of the aliphatic carboxylic acid metal salt (D) is at least one selected from long Periodic Table 4th-period d-block elements,

wherein respective contents of the acetic acid and/or the salt thereof (B), the aliphatic carboxylic acid (C), and the aliphatic carboxylic acid metal salt (D) satisfy the following formulae (1) and (2) on a weight basis:

0.001 ≤ (content of (D) in terms of metal ion/content of (B) in terms of acetic acid ion) ≤ 1.30···(1)

0.11 ≤ (content of (D) in terms of metal ion/content of (C) in terms of carboxylic acid ion) ≤ 100···(2); and

at least one polyamide layer (γ) laminated on at least one surface of the resin composition layer (α),

wherein a ratio "$(\alpha_L)/(\gamma_L)$" of from 10/90 to 99/1 is satisfied, where

α_L represents the thickness of the resin composition layer (α) or the thickness of a resin composition layer having the largest thickness among the resin composition layers (α), and

γ_L represents the thickness of the polyamide layer (γ) or the thickness of a polyamide layer having the largest thickness among the polyamide layers (γ).

19~~20~~. A package, comprising the multilayer structure of any one of claims 1~~5~~6 to 1~~8~~9.