CLAIMS

1. A resin composition comprising:

(A) an ethylene-vinyl alcohol copolymer;

(B) at least one selected from the set consisting of a carboxylic acid and a carboxylate ion; and

(C) a metal ion,

wherein

the at least one selected from the set consisting of a carboxylic acid and a carboxylate ion (B) comprises (B2) at least one selected from the set consisting of a multivalent carboxylic acid having a hydroxy group and a multivalent carboxylate ion having a hydroxy group,

the content of the at least one selected from the set consisting of a multivalent carboxylic acid having a hydroxy group and a multivalent carboxylate ion having a hydroxy group (B2) is 0.01 μmol/g or greater and 20 μmol/g or less,

the metal ion (C) comprises (C1) an alkali metal ion, and

the molar ratio (B2/C1) of the multivalent carboxylic acid having a hydroxy group and the multivalent carboxylate ion having a hydroxy group (B2) to the alkali metal ion (C1) is 0.002 or greater and 2 or less.

2. The resin composition according to claim 1, wherein at least a pair of carboxyl groups in the at least one selected from the set consisting of a multivalent carboxylic acid having a hydroxy group and a multivalent carboxylate ion having a hydroxy group (B2) are linked each other via a linking group having 1 or 2 carbon atom(s).

3. The resin composition according to claim 1 or 2, wherein the content of the metal ion (C) is 2.5 μmol/g or greater and 22 μmol/g or less.

4. The resin composition according to any one of claims 1 to 3, wherein the content of the alkali metal ion (C1) is 2.5 μmol/g or greater and 22 μmol/g or less.

5. The resin composition according to any one of claims 1 to 4, wherein the metal ion (C) comprises (C2) an alkaline earth metal ion.

6. The resin composition according to any one of claims 1 to 5, the resin composition further comprising (D) a phosphate compound, wherein the content of the phosphate compound (D) is 5 ppm or greater and 500 ppm or less in a value of phosphate radical.

7. The resin composition according to any one of claims 1 to 6, the resin composition further comprising (E) a boron compound, wherein the content of the boron compound (E) is 5 ppm or greater and 2,000 ppm or less in a value of boron element.

8. The resin composition according to any one of claims 1 to 7, wherein the content of (B1) a monocarboxylic acid and a monocarboxylate ion as the at least one selected from the set consisting of a carboxylic acid and a carboxylate ion (B) is less than 2 μmol/g.

9. The resin composition according to any one of claims 1 to 7, the at least one selected from the set consisting of a carboxylic acid and a carboxylate ion (B) further comprising (B1) at least one selected from the set consisting of a monocarboxylic acid and a monocarboxylate ion, and wherein the content of the monocarboxylic acid and the monocarboxylate ion (B1) is no less than 2 μmol/g.

10. The resin composition according to any one of claims 1 to 9, the resin composition being for use in co-extrusion molding.

11. A method for producing the resin composition according to any one of claims 1 to 10, the method comprising

a copolymerizing step in which ethylene and a vinyl ester are copolymerized to obtain an ethylene-vinyl ester copolymer, and

a saponifying step in which the ethylene-vinyl ester copolymer is saponified to obtain an ethylene-vinyl alcohol copolymer, and the method further comprising

a mixing step in which the ethylene-vinyl ester copolymer or the ethylene-vinyl alcohol copolymer is mixed with (B2') at least one of a multivalent carboxylic acid and a salt thereof, later than the copolymerizing step.

12. The method for producing the resin composition according to claim

11, wherein the mixing step is carried out in a system in which the concentration of the vinyl ester is no greater than 1,000 ppm.

13. The method for producing the resin composition according to claim 11 or 12, the method further comprising:

an pelletizing step in which a water-containing pellet of an ethylene-vinyl alcohol copolymer is obtained by an pelletizing operation from a solution comprising the ethylene-vinyl alcohol copolymer obtained in the saponifying step; and

a drying step in which the water-containing pellet is dried to obtain a resin composition comprising an ethylene-vinyl alcohol copolymer,

wherein the mixing step is carried out after the pelletizing step.

14. The method for producing the resin composition according to claim 13, wherein the mixing step is carried out between the pelletizing step and the drying step by immersing the water-containing pellet in a solution containing the at least one of a multivalent carboxylic acid and a salt thereof (B2').

15. The method for producing the resin composition according to claim 13, wherein the mixing step is carried out in the pelletizing step.

16. The method for producing the resin composition according to claim 11 or 12, wherein the mixing step is carried out in the saponifying step.

17. A multilayered structure provided with at least one layer obtained from the resin composition according to any one of claims 1 to 10.

CLAIMS

1. A resin composition comprising:

(A) an ethylene-vinyl alcohol copolymer;

(B) at least one selected from the set consisting of a carboxylic acid and a carboxylate ion; and

(C) a metal ion,

wherein

the at least one selected from the set consisting of a carboxylic acid and a carboxylate ion (B) comprises (B2) at least one selected from the set consisting of a multivalent carboxylic acid having a hydroxy group and a multivalent carboxylate ion having a hydroxy group,

the content of the at least one selected from the set consisting of a multivalent carboxylic acid having a hydroxy group and a multivalent carboxylate ion having a hydroxy group (B2) is 0.01 μmol/g or greater and 20 μmol/g or less,

the metal ion (C) comprises (C1) an alkali metal ion,

the molar ratio (B2/C1) of the multivalent carboxylic acid having a hydroxy group and the multivalent carboxylate ion having a hydroxy group (B2) to the alkali metal ion (C1) is 0.002 or greater and 2 or less, and

the content of the metal ion (C) is 2.5 μmol/g or greater and 22 μmol/g or less.

2. The resin composition according to claim 1, wherein at least a pair of carboxyl groups in the at least one selected from the set consisting of a multivalent carboxylic acid having a hydroxy group and a multivalent carboxylate ion having a hydroxy group (B2) are linked each other via a linking group having 1 or 2 carbon atom(s).

3. The resin composition according to claim 1 or 2, wherein the at least one selected from the set consisting of a multivalent carboxylic acid having a hydroxy group and a multivalent carboxylate ion having a hydroxy group (B2) has at least three carboxyl groups.

4. The resin composition according to any one of claims 1 to 3, wherein the content of the alkali metal ion (C1) is 2.5 μmol/g or greater and 22 μmol/g or less.

5. The resin composition according to any one of claims 1 to 4, wherein the metal ion (C) comprises (C2) an alkaline earth metal ion.

6. The resin composition according to any one of claims 1 to 5, the resin composition further comprising (D) a phosphate compound, wherein the content of the phosphate compound (D) is 5 ppm or greater and 500 ppm or less in a value of phosphate radical.

7. The resin composition according to any one of claims 1 to 6, the resin composition further comprising (E) a boron compound, wherein the content of the boron compound (E) is 5 ppm or greater and 2,000 ppm or less in a value of boron element.

8. The resin composition according to any one of claims 1 to 7, wherein the content of (B1) a monocarboxylic acid and a monocarboxylate ion as the at least one selected from the set consisting of a carboxylic acid and a carboxylate ion (B) is less than 2 μmol/g.

9. The resin composition according to any one of claims 1 to 7, the at least one selected from the set consisting of a carboxylic acid and a carboxylate ion (B) further comprising (B1) at least one selected from the set consisting of a monocarboxylic acid and a monocarboxylate ion, and wherein the content of the monocarboxylic acid and the monocarboxylate ion (B1) is no less than 2 μmol/g.

10. The resin composition according to any one of claims 1 to 9, the resin composition being for use in co-extrusion molding.

11. A method for producing the resin composition according to any one of claims 1 to 10, the method comprising

a copolymerizing step in which ethylene and a vinyl ester are copolymerized to obtain an ethylene-vinyl ester copolymer, and

a saponifying step in which the ethylene-vinyl ester copolymer is saponified to obtain an ethylene-vinyl alcohol copolymer, and the method further comprising

a mixing step in which the ethylene-vinyl ester copolymer or the ethylene-vinyl alcohol copolymer is mixed with (B2') at least one of a multivalent carboxylic acid and a salt thereof, later than the copolymerizing step.

12. The method for producing the resin composition according to claim 11, wherein the mixing step is carried out in a system in which the concentration of the vinyl ester is no greater than 1,000 ppm.

13. The method for producing the resin composition according to claim 11 or 12, the method further comprising:

an pelletizing step in which a water-containing pellet of an ethylene-vinyl alcohol copolymer is obtained by an pelletizing operation from a solution comprising the ethylene-vinyl alcohol copolymer obtained in the saponifying step; and

a drying step in which the water-containing pellet is dried to obtain a resin composition comprising an ethylene-vinyl alcohol copolymer,

wherein the mixing step is carried out after the pelletizing step.

14. The method for producing the resin composition according to claim 13, wherein the mixing step is carried out between the pelletizing step and the drying step by immersing the water-containing pellet in a solution containing the at least one of a multivalent carboxylic acid and a salt thereof (B2').

15. The method for producing the resin composition according to claim 13, wherein the mixing step is carried out in the pelletizing step.

16. The method for producing the resin composition according to claim 11 or 12, wherein the mixing step is carried out in the saponifying step.

17. A multilayered structure provided with at least one layer obtained from the resin composition according to any one of claims 1 to 10.