[CLAIMS]

[Claim 1]

A method for producing a vinyl acetate-ethylene copolymer emulsion, the method comprising:

(S100) forming a first mixed solution containing a vinyl acetate-ethylene copolymer, comprising polymerizing vinyl acetate and ethylene;

(S200) forming a second mixed solution by adding potassium iodate (KIO_3) to the first mixed solution, wherein potassium iodate (KIO_3) is added after 30 minutes to 2 hours after completion of the polymerization in step S100; and

(S300) adding an isothiazolone-based compound to the second mixed solution in an amount of 10 to 150 ppm based on the total amount of the vinyl acetate-ethylene copolymer emulsion.

[Claim 2]

The method of claim 1, wherein in step S200, potassium iodate (KIO_3) is added after 45 minutes to 1 hour and 30 minutes after completion of the polymerization in step S100.

[Claim 3]

The method of claim 1, wherein in step S200, KIO_3 is added in an amount of 10 to 200 ppm based on a total amount of the first mixed solution.

[Claim 4]

The method of claim 3, wherein in step S200, KIO_3 is added in an amount of 50 to 150 ppm based on the total amount of the first mixed solution.

[Claim 5]

The method of claim 1, wherein in step S300, the isothiazolone-based compound is added in an amount of 10 to 150 ppm based on a total amount of the vinyl acetate-ethylene copolymer emulsion.

[Claim 6]

The method of claim 1, wherein step S100 comprises:

(S110) mixing a first solution comprising water, a first emulsifier, and a pH adjusting agent with a second solution comprising water and an oxidation auxiliary agent;

(S120) introducing vinyl acetate and ethylene into the mixture obtained in step S110 under a nitrogen atmosphere;

(S130) introducing a first reducing agent into a product obtained in step S120, and then warming the resulting mixture to 45°C to 65°C;

(S140) introducing an oxidation-reduction initiator, vinyl acetate, and a third solution including water, a NaOH solution, a functional monomer, and a second emulsifier into a product obtained in step S130; and

(S150) completing a polymerization, and then simultaneously introducing an oxidizing agent and a second reducing agent into the product obtained in step S140.

[Claim 7]

The method of claim 1, wherein step S100 comprises:

(S101) preparing a first solution comprising water, a first emulsifier, and a pH adjusting agent;

(S102) introducing vinyl acetate and ethylene into the first solution under a nitrogen atmosphere;

(S103) introducing a first reducing agent into a product obtained in step S102, and then warming the resulting mixture to 45°C to 65°C;

(S104) introducing a thermal initiator; vinyl acetate; and a third solution including water,

NaOH, a functional monomer, and a second emulsifier into a product obtained in step S103; and

(S105) completing a polymerization reaction, and then simultaneously introducing an oxidizing agent and a second reducing agent.

[Claim 8]

The method of claim 6 or 7, wherein the first emulsifier is a sulfonate group-containing emulsifier.

[Claim 9]

The method of claim 6, wherein the oxidation-reduction initiator comprises:

(a) one or more reduction initiators selected from the group consisting of a transition metal salt; and erythorbic acid, ascorbic acid, and an alkali metal salt thereof and

(b) one or more oxidation initiators selected from the group consisting of hydrogen peroxide, tri-butyl hydroperoxide, tert-butyl hydroperoxide, cumyl hydroperoxide, and benzoyl peroxide.

[Claim 10]

A vinyl acetate-ethylene copolymer emulsion comprising:
a vinyl acetate-ethylene copolymer;
an isothiazolone-based compound in an amount of 10 to 150 ppm based on the total amount of the vinyl acetate-ethylene copolymer emulsion; and
potassium iodate (KIO_3).

[Claim 11]

The vinyl acetate-ethylene copolymer emulsion of claim 10, further comprising: one or more additives selected from the group consisting of an antifoaming agent, a cationic inorganic pigment, a thickener, a plasticizer, and a dispersant.