CLAIMS

1. A water-absorbent resin particle in which a water-absorption rate of physiological saline is 1 second to 15 seconds, a median particle size is 100 μm to 600 μm, and a residual volatile component content is 1.5% by weight or less.

2. The water-absorbent resin particle according to claim 1, wherein a specific surface area is 0.08 m^2/g or more.

3. The water-absorbent resin particle according to claim 1 or 2, wherein a water-absorption capacity of the physiological saline is 30 g/g to 90 g/g.

4. A method of producing a water-absorbent resin particle, comprising in the following order:

a first polymerization step including obtaining a suspension containing a water-containing gelated polymer by polymerizing a water-soluble ethylenically unsaturated monomer in a suspension containing an oily liquid containing a hydrocarbon dispersion medium, a first aqueous liquid containing an aqueous solvent, the water-soluble ethylenically unsaturated monomer and a radical polymerization initiator, and a surfactant having an HLB value of 6 or higher, the first aqueous liquid being dispersed in the oily liquid; and

a second polymerization step including mixing the suspension containing the water-containing gelated polymer at 45°C or higher with a second aqueous liquid containing an aqueous solvent, a water-soluble ethylenically unsaturated monomer and a radical polymerization initiator, and polymerizing the water-soluble ethylenically unsaturated monomer in a suspension in which the second aqueous liquid is further

dispersed.

5. The method according to claim 4, wherein in the second polymerization step, a temperature of the suspension in which the second aqueous liquid has been further dispersed at the time of completion of mixing of the suspension with the second aqueous liquid is 35°C or higher.

6. The method according to claim 4 or 5, wherein in the first polymerization step, the oily liquid contains 50 parts by weight to 650 parts by weight of the hydrocarbon dispersion medium relative to 100 parts by weight of the water-soluble ethylenically unsaturated monomer contained in the first aqueous liquid.

7. A method of producing a water-absorbent resin particle comprising:

a polymerization step including polymerizing a water-soluble ethylenically unsaturated monomer in a suspension containing an oily liquid containing a hydrocarbon dispersion medium, and an aqueous liquid containing an aqueous solvent and the water-soluble ethylenically unsaturated monomer, the aqueous solvent containing water, the aqueous liquid being dispersed in the oily liquid, wherein

the aqueous liquid has a viscosity of 20 mPa·s or more at 20°C, and

the suspension further contains a surfactant having an HLB value of 6 or higher.

8. The method according to claim 7, wherein the aqueous liquid further contains a water-soluble thickener, and the water-soluble thickener contains at least one type of compound selected from

hydroxyalkyl celluloses, hydroxyalkyl alkyl celluloses and carboxyalkyl hydroxyalkyl celluloses.

9. A water-absorbent resin particle obtainable by the method according to claim 7 or 8, wherein

(1) a water-absorption capacity of physiological saline is 30 g/g to 90 g/g,

(2) a median particle size is 100 μm to 600 μm,

(3) a water-absorption rate of the physiological saline is 1 second to 20 seconds,

(4) an equilibrium swelling capacity is 20 mm or more, and

(5) a residual volatile component content is 1.5% by weight or less.

10. A method of producing a water-soluble resin particle, comprising:

a polymerization step including polymerizing a water-soluble ethylenically unsaturated monomer in a suspension containing an oily liquid containing a hydrocarbon dispersion medium, and an aqueous liquid containing an aqueous solvent and the water-soluble ethylenically unsaturated monomer, the aqueous solvent containing water, the aqueous liquid being dispersed in the oily liquid, wherein

the aqueous liquid further contains a hydrophilic polymeric dispersion agent, and

the suspension further contains a surfactant having an HLB value of 6 or higher.

11. The method according to claim 10, wherein the hydrophilic polymeric dispersion agent contains at least one type of compound

selected from the group consisting of polyvinyl alcohol, polyvinylpyrrolidone, polyethylene glycol, polypropylene glycol and polyglycerol.

12. The method according to claim 10 or 11, wherein the aqueous liquid contains 0.001 parts by weight to 10 parts by weight of the hydrophilic polymeric dispersion agent relative to 100 parts by weight of the water-soluble ethylenically unsaturated monomer.

13. A water-absorbent resin particle obtainable by the method according to claims 10 to 12, wherein

(1) a water-absorption capacity of physiological saline is 30 g/g to 90 g/g,

(2) a median particle size is 100 μm to 600 μm,

(3) a water-absorption rate of the physiological saline is 1 second to 20 seconds,

(4) an equilibrium swelling capacity is 20 mm or more, and

(5) a residual volatile component content is 1.5% by weight or less.

14. The method according to any of claims 4 to 8 or 10 to 12, wherein the surfactant contains at least one type of compound selected from the group consisting of sorbitan fatty acid esters, polyglycerol fatty acid esters and sucrose fatty acid esters.

15. The method according to any of claims 4 to 8, 10 to 12 or 14, wherein the water-soluble ethylenically unsaturated monomer contains at least one type of compound selected from the group consisting of acrylic acid and a salt thereof, methacrylic acid and a salt thereof, and acrylamide.

16. The method according to any of claims 4 to 8, 10 to 12, 14 or 15, wherein the hydrocarbon dispersion medium contains at least one type of compound selected from the group consisting of chain aliphatic hydrocarbons having 6 to 8 carbon atoms and alicyclic hydrocarbons having 6 to 8 carbon atoms.

17. An absorbent material comprising: the water-absorbent resin particle according to any of claims 1 to 3, 9 or 13; and hydrophilic fibers.

18. An absorbent article comprising:

a liquid-permeable sheet;

a liquid-impermeable sheet; and

the absorbent material according to claim 17,

the absorbent material being arranged between the liquid-permeable sheet and the liquid-impermeable sheet being arranged facing each other.

19. A water blocking material comprising:

a first liquid-permeable sheet;

a second liquid-permeable sheet; and

the water-absorbent resin particle according to any of claims 1 to 3, 9 or 13,

the water-absorbent resin particle being arranged between the first liquid-permeable sheet and the second liquid-permeable sheet being arranged facing each other.

CLAIMS

1. A water-absorbent resin particle, wherein a water-absorption rate of physiological saline is 1 second to 15 seconds, a median particle size is 100 μm to 600 μm, a residual volatile component content is 1.5% by weight or less, and the water-absorption rate is measured by the amount of time from addition of 2.0±0.002 g of the water-absorbent resin particles into 50.0±0.1 g of vortexed physiological saline at a rotating speed of 600 rpm until the vortex on the liquid surface converged.

2. The water-absorbent resin particle according to claim 1, wherein a specific surface area is 0.08 m^2/g or more.

3. The water-absorbent resin particle according to claim 1, wherein a water-absorption capacity of the physiological saline is 30 g/g to 90 g/g.

4. A method of producing a water-absorbent resin particle, comprising in the following order:

a first polymerization step including obtaining a suspension containing a water-containing gelated polymer by polymerizing a water-soluble ethylenically unsaturated monomer in a suspension containing an oily liquid containing a hydrocarbon dispersion medium, a first aqueous liquid containing an aqueous solvent, the water-soluble ethylenically unsaturated monomer and a radical polymerization initiator, and a surfactant having an HLB value of 6 or higher, the first aqueous liquid being dispersed in the oily liquid; and

a second polymerization step including mixing the suspension

containing the water-containing gelated polymer at 45°C or higher with a second aqueous liquid containing an aqueous solvent, a water-soluble ethylenically unsaturated monomer and a radical polymerization initiator, and polymerizing the water-soluble ethylenically unsaturated monomer in a suspension in which the second aqueous liquid is further dispersed.

5. The method according to claim 4, wherein in the second polymerization step, a temperature of the suspension in which the second aqueous liquid has been further dispersed at the time of completion of mixing of the suspension with the second aqueous liquid is 35°C or higher.

6. The method according to claim 4, wherein in the first polymerization step, the oily liquid contains 50 parts by weight to 650 parts by weight of the hydrocarbon dispersion medium relative to 100 parts by weight of the water-soluble ethylenically unsaturated monomer contained in the first aqueous liquid.

7. A method of producing a water-absorbent resin particle comprising:

a polymerization step including polymerizing a water-soluble ethylenically unsaturated monomer in a suspension containing an oily liquid containing a hydrocarbon dispersion medium, and an aqueous liquid containing an aqueous solvent and the water-soluble ethylenically unsaturated monomer, the aqueous solvent containing water, the aqueous liquid being dispersed in the oily liquid, wherein

the aqueous liquid has a viscosity of 20 mPa·s or more at 20°C, and

the suspension further contains a surfactant having an HLB value of 6 or higher.

8. The method according to claim 7, wherein the aqueous liquid further contains a water-soluble thickener, and the water-soluble thickener contains at least one type of compound selected from hydroxyalkyl celluloses, hydroxyalkyl alkyl celluloses and carboxyalkyl hydroxyalkyl celluloses.

9. A method of producing a water-soluble resin particle, comprising:

a polymerization step including polymerizing a water-soluble ethylenically unsaturated monomer in a suspension containing an oily liquid containing a hydrocarbon dispersion medium, and an aqueous liquid containing an aqueous solvent and the water-soluble ethylenically unsaturated monomer, the aqueous solvent containing water, the aqueous liquid being dispersed in the oily liquid, wherein

the aqueous liquid further contains a hydrophilic polymeric dispersion agent, and

the suspension further contains a surfactant having an HLB value of 6 or higher.

10. The method according to claim 9, wherein the hydrophilic polymeric dispersion agent contains at least one type of compound selected from the group consisting of polyvinyl alcohol, polyvinylpyrrolidone, polyethylene glycol, polypropylene glycol and polyglycerol.

11. The method according to claim 9, wherein the aqueous liquid contains 0.001 parts by weight to 10 parts by weight of the hydrophilic polymeric dispersion agent relative to 100 parts by weight of the water-soluble ethylenically unsaturated monomer.

12. The method according to claim 4, wherein the surfactant contains at least one type of compound selected from the group consisting of sorbitan fatty acid esters, polyglycerol fatty acid esters and sucrose fatty acid esters.

13. The method according to claim 4, wherein the water-soluble ethylenically unsaturated monomer contains at least one type of compound selected from the group consisting of acrylic acid and a salt thereof, methacrylic acid and a salt thereof, and acrylamide.

14. The method according to claim 4, wherein the hydrocarbon dispersion medium contains at least one type of compound selected from the group consisting of chain aliphatic hydrocarbons having 6 to 8 carbon atoms and alicyclic hydrocarbons having 6 to 8 carbon atoms.

15. The method according to claim 8, wherein the surfactant contains at least one type of compound selected from the group consisting of sorbitan fatty acid esters, polyglycerol fatty acid esters and sucrose fatty acid esters.

16. The method according to claim 9, wherein the surfactant contains at least one type of compound selected from the group consisting of sorbitan fatty

acid esters, polyglycerol fatty acid esters and sucrose fatty acid esters.

17. The method according to claim 8, wherein the water-soluble ethylenically unsaturated monomer contains at least one type of compound selected from the group consisting of acrylic acid and a salt thereof, methacrylic acid and a salt thereof, and acrylamide.

18. The method according to claim 9, wherein the water-soluble ethylenically unsaturated monomer contains at least one type of compound selected from the group consisting of acrylic acid and a salt thereof, methacrylic acid and a salt thereof, and acrylamide.

19. The method according to claim 8, wherein the hydrocarbon dispersion medium contains at least one type of compound selected from the group consisting of chain aliphatic hydrocarbons having 6 to 8 carbon atoms and alicyclic hydrocarbons having 6 to 8 carbon atoms.

20. The method according to claim 9, wherein the hydrocarbon dispersion medium contains at least one type of compound selected from the group consisting of chain aliphatic hydrocarbons having 6 to 8 carbon atoms and alicyclic hydrocarbons having 6 to 8 carbon atoms.