CLAIMS

1. Spray-pumpable composition for topical use comprising hydrophilic silicon dioxide, an emulsifier, at least one active ingredient and optionally one or more additives.

2. Composition according to claim 1, wherein the active ingredient is selected from zinc oxide, titanium dioxide, a steroid hormone, a corticosteroid hormone, an antimicrobial agent, an antibacterial agent, an antifungal agent, an antibiotic or any combination thereof.

3. Composition according to claim 1 or 2, wherein the hydrophilic silicon dioxide has a specific surface area of between 130 and 380 m^2/g.

4. Composition according to claim 3, wherein the hydrophilic silicon dioxide has a specific surface area of between 150 and 300 m^2/g.

5. Composition according to claim 4, wherein the hydrophilic silicon dioxide has a specific surface area of between 175 and 225 m^2/g.

6. Composition according to claim 5, wherein the hydrophilic silicon dioxide has a specific surface area of around 200 m^2/g.

7. Composition according to any one of claims 1-6, wherein the composition is a suspension of hydrophilic silicon dioxide in an emulsion.

8. Composition according to claim 7, wherein the composition is a suspension of hydrophilic silicon dioxide in an oil-in-water emulsion.

9. Composition according to any one of claims 1-8, wherein the hydrophilic silicon dioxide is suspended in the water phase of an emulsion.

10. Composition according to claim 9, wherein the hydrophilic silicon dioxide is suspended in the water phase of an oil-in-water emulsion.

11. Composition according to any one of claims 1-10, wherein the hydrophilic silicon dioxide is present as unbound hydrophilic silicon dioxide particles.

12. Composition according to any of the claims 1-11, wherein the hydrophilic silicon dioxide is present in a concentration of 0.01-0.5 weight percent.

13. Composition according to claim 12, wherein the hydrophilic silicon dioxide is present in a concentration of about 0.1 weight percent.

14. Composition according to any of the claims 1-13, wherein the composition comprises at least 5 weight percent zinc oxide or titanium dioxide.

15. Composition according to claim 14, wherein the composition comprises at least 10 weight percent zinc oxide or titanium dioxide.

16. Composition according to claim 15, wherein the composition comprises at least 15 weight percent zinc oxide or titanium dioxide.

17. Composition according to any of the claims 1-16, wherein the zinc oxide or titanium dioxide is present as particles having a size distribution in the range of 45-90 micron.

18. Composition according to any of the claims 1-17, wherein the emulsifier is a hydrophilic or lipophilic non-ionic surfactant.

19. Composition according to claim 18, wherein the emulsifier is a lipophilic non-ionic surfactant.

20. Composition according to claim 18, wherein the emulsifier is a gluco-lipid emulsifier or a gluco-lipid co-emulsifier.

21. Composition according to any one of claims 1-20, wherein the emulsifier comprises cetearylalcohols and/or cetearylglucosides or C_{14}-C_{22} alcohols and/or C_{12}-C_{20} glucosides or a mixture thereof.

22. Composition according to any one of claims 1-21, wherein the emulsifier is present in a concentration of 0.1-10 weight percent.

23. Composition according to claim 22, wherein the emulsifier is present in a concentration of 0.5-6 weight percent.

24. Composition according to claim 23, wherein the emulsifier is present in a concentration of 1-4 weight percent.

25. Composition according to claim 24, wherein the emulsifier is present in a concentration of about 3 weight percent.

26. Composition according to any of the claims 1-25, wherein the additive is selected from the group consisting of a skin-softener, a preservative, an emollient, a thickener, a vitamin and a plant extract.

27. Composition according to claim 26, wherein the skin-softener is selected from the group consisting of glycerol and propylene glycol.

28. Composition according to claim 26 or 27, wherein the skin-softener is present in a concentration of 1-5 weight percent.

29. Composition according to claim 28, wherein the skin-softener is present in a concentration of about 3 weight percent.

30. Composition according to any one of claims 26-29, wherein

the preservative is selected from the group consisting of sorbate or a salt thereof; a parabene such as

methylparabene, ethylparabene, propylparabene or butylparabene or a mixture thereof; phenoxyethanol; ethylhexylglycerin; iodopropynyl butylcarbamate; and a cosmetic chelating agent, such as ethylene diamene tetraacetic acid (EDTA) or a salt thereof.

31. Composition according to claim 30, wherein the preservative is selected from phenoxyethanol and ethylhexylglycerin.

32. Composition according to claim 30, wherein the preservative is Euxyl PE 9010.

33. Composition according to any one of claims 30-32, wherein the preservative is used in a concentration of 0.01-5 weight percent.

34. Composition according to claim 33, wherein the preservative is used in a concentration of 0.5-1.5 weight percent.

35. Composition according to claim 34, wherein the preservative is used in a concentration of 1 weight percent.

36. Composition according to any one of claims 26-35, wherein the emollient is selected from the group consisting of triglycerides.

37. Composition according any one of claims 26-35, wherein the emollient is selected from the group consisting of coco triglycerides.

38. Composition according to any one of claims 26-35, wherein the emollient is selected from the group consisting of, cocoalkyl triglycerides or cetiol LC.

39. Composition according to any one of claims 26-38, wherein the emollient is present in a concentration of 1-10 weight percent.

40. Composition according to claim 39, wherein the emollient is present in a concentration of about 5 weight percent.

41. Composition according to any one of claims 26-40, wherein the

thickeneris selected from the group consisting of fatty acid esters of glycerol.

42. Composition according to any one of claims 26-40, wherein the

thickener is selected from the group consisting of triglycerides and/or diglycerides.

43. Composition according to any one of claims 26-42, wherein the thickener is present in a concentration of 0.1-5 weight percent.

44. Composition according to claim 43, wherein the thickener is present in a concentration of 0.5-2 weight percent.

45. Composition according to claim 44, wherein the thickener is present in about 1 weight percent.

46. Method for the preparation of a spray-pumpable composition for topical use, comprising the steps of

a) preparing a lipophilic phase comprising at least one active ingredient and optional additives;

b) preparing an aqueous phase comprising hydrophilic silicon dioxide and optional additives,

wherein the lipophilic and/or hydrophilic phase comprises an emulsifier, and,

c) mixing the lipophilic phase of step a) with the aqueous phase of step b) to obtain the spray-pumpable composition.

47. Method according to claim 46, wherein the composition as obtained is a suspension in an emulsion.

48. Method according to claim 47, wherein the composition as obtained is a suspension in an oil-in-water emulsion.

49. Method according to any one of claims 46-48, wherein the hydrophilic silicon dioxide has a specific surface area of between 130 and 380 m^2/g.

50. Method according to claim 49, wherein the hydrophilic silicon dioxide has a specific surface area of between 150 and 300 m^2/g.

51. Method according to claim 50, wherein the hydrophilic silicon dioxide has a specific surface area of between 175 and 225 m^2/g.

52. Method according to claim 51, wherein the hydrophilic silicon dioxide has a specific surface area of around 200 m^2/g.

53. Method according to any of the claims 46-52, wherein the active ingredient of step a) is selected from zinc oxide, titanium dioxide, a steroid hormone, a corticosteroid hormone, an antimicrobial agent, an antibacterial agent, an antifungal agent, an antibiotic or any combination thereof.

54. Method according to any of the claims 46-53, wherein the zinc oxide of step a) is added as a zinc oxide-in-oil formulation.

55. Method according to claim 54, wherein the zinc oxide-in-oil formulation comprises zinc oxide particles in a concentration of 40-65 weight percent.

56. Method according to claim 55, wherein the zinc oxide-in-oil formulation comprises zinc oxide particles in a concentration of 50-65 weight percent.

57. Method according to claim 56, wherein the zinc oxide-in-oil formulation comprises zinc oxide particles in a concentration of about 60 weight percent.

58. Method according to any one of claims 54-57, wherein zinc oxide particles are added to the aqueous phase of step b) in such an amount that the composition as obtained comprises an additional 5 weight percent zinc oxide.

59. Method according to any of the claims 46-58, wherein the steroid hormone, the corticosteroid hormone, an antimicrobial agent, an antibacterial agent, an antifungal agent, an antibiotic or any combination thereof are added to the lipophilic phase as a dispersion in propylene glycol.

60. Composition according to any of the claims 1-45 or obtainable by the method of any of the claims 46-59 for use in the treatment of a topical skin disorder in a mammal.

61. Composition according to claim 60, wherein the topical skin disorder is a rash, sun burn, eczema, an inflammation or an infection.

62. Composition according to claim 61, wherein the topical skin disorder is a diaper rash.

63. Composition according to any one of claims 60-62 for use in the treatment of a topical skin disorder in a human being.

64. Use of hydrophilic silicon dioxide in a method for the preparation of a spray-pumpable suspension in an emulsion.

65. Use according to claim 64, wherein the spray-pumpable suspension in an emulsion is a suspension in an oil-in-water emulsion.

CLAIMS

1. Spray-pumpable composition for topical use comprising unbound hydrophilic silicon dioxide particles, an emulsifier, at least one active ingredient, preferably selected from zinc oxide, titanium dioxide, a steroid hormone, in a particular a corticosteroid hormone, an antimicrobial agent, an antibacterial agent, an antifungal agent, an antibiotic or any combination thereof, and optionally one or more additives.

2. Composition according to claim 1, wherein the hydrophilic silicon dioxide has a specific surface area of between 130 and 380 m^2/g.

3. Composition according to claim 2, wherein the hydrophilic silicon dioxide has a specific surface area of between 150 and 300 m^2/g.

4. Composition according to claim 3, wherein the hydrophilic silicon dioxide has a specific surface area of between 175 and 225 m^2/g.

5. Composition according to claim 4, wherein the hydrophilic silicon dioxide has a specific surface area of around 200 m^2/g.

6. Composition according to any one of claims 1-5,wherein the composition is a suspension of hydrophilic silicon dioxide in an emulsion,

7. Composition according to claim 6, wherein the composition is a suspension of hydrophilic silicon dioxide in an oil-in-water emulsion.

8. Composition according to any one of claims 1-7, wherein the hydrophilic silicon dioxide is suspended in the water phase of an emulsion.

9. Composition according to claim 8, wherein the hydrophilic silicon dioxide is suspended in the water phase of an oil-in-water emulsion.

10. Composition according to any one of claims 1-9 wherein the hydrophilic silicon dioxide is

present as unbound hydrophilic silicon dioxide particles.

11. Composition according to any of the claims 1-10, wherein the hydrophilic silicon dioxide is present in a concentration of 0.01-0.5 weight percent.

12. Composition according to claim 11, wherein the hydrophilic silicon dioxide is present in a concentration of about 0.1 weight percent.

13. Composition according to any of the claims 1-12, wherein the composition comprises at least 5 weight percent zinc oxide or titanium dioxide.

14. Composition according to claim 13, wherein the composition comprises at least 10 weight percent zinc oxide or titanium dioxide.

15. Composition according to claim 14, wherein the composition comprises at least 15 weight percent zinc oxide or titanium dioxide.

16. Composition according to any of the claims 1-15, wherein the zinc oxide or titanium dioxide is present as particles having a size distribution in the range of 45-90 micron.

17. Composition according to any of the claims 1-16, wherein the emulsifier is a hydrophilic or lipophilic non-ionic surfactant.

18. Composition according to claim 17, wherein the emulsifier is a lipophilic non-ionic surfactant.

19. Composition according to claim 17, wherein the emulsifier is a gluco-lipid emulsifier or a gluco-lipid co-emulsifier.

20. Composition according to any one of claims 1-19, wherein the emulsifier comprises cetearylalcohols and/or cetearylglucosides or C_{14}-C_{22} alcohols and/or C_{12}-C_{20} glucosides or a mixture thereof.

21. Composition according to any one of claims 1-20, wherein the emulsifier is present in a concentration of 0.1-10 weight percent.

22. Composition according to claim 21, wherein the emulsifier is present in a concentration of 0.5-5 weight percent.

23. Composition according to claim 22, wherein the emulsifier is present in a concentration of 1-4 weight percent.

24. Composition according to claim 23, wherein the emulsifier is present in a concentration of about 3 weight percent.

25. Composition according to any of the claims 1-24, wherein the additive is selected from the group consisting of a skin-softener, a preservative, an emollient, a thickener, a vitamin and a plant extract.

26. Composition according to claim 25, wherein the skin-softener is selected from the group consisting of glycerol and propylene glycol.

27. Composition according to claim 25 or 26, wherein the skin-softener is present in a concentration of 1-5 weight percent.

28. Composition according to claim 27, wherein the skin-softener is present in a concentration of about 3 weight percent.

29. Composition according to any one of claims 25-28, wherein the preservative is selected from the group consisting of sorbate or a salt thereof; a parabene such as methylparabene, ethylparabene, propylparabene or butylparabene or a mixture thereof; phenoxyethanol; ethylhexylglycerin; iodopropynyl butylcarbamate; and a cosmetic chelating agent, such as ethylene diamene tetraacetic acid (EDTA) or a salt thereof.

30. Composition according to claim 29, wherein the preservative is selected from phenoxyethanol and ethylhexylglycerin.

31. Composition according to claim 29, wherein the preservative is Euxyl PE 9010.

32. Composition according to any one of claims 29-31, wherein the preservative is used in a concentration of 0.01-5 weight percent.

33. Composition according to claim 32, wherein the preservative is used in a concentration of 0.5-1.5 weight percent.

34. Composition according to claim 33, wherein the preservative is used in a concentration of 1 weight percent.

35. Composition according to any one of claims 25-34, wherein the emollient is selected from the group consisting of triglycerides.

36. Composition according any one of claims 25-34, wherein the emollient is selected from the group consisting of coco triglycerides.

37. Composition according to any one of claims 25-34, wherein the emollient is selected from the group consisting of, cocoalkyl triglycerides or cetiol LC.

38. Composition according to any one of claims 25-37, wherein the emollient is present in a concentration of 1-10 weight percent.

39. Composition according to claim 38, wherein the emollient is present in a concentration of about 5 weight percent.

40. Composition according to any one of claims 25-39, wherein the thickeneris selected from the group consisting of fatty acid esters of glycerol.

41. Composition according to any one of claims 25-39, wherein the thickener is selected from the

group consisting of triglycerides and/or diglycerides.

42. Composition according to any one of claims 25-41, wherein the thickener is present in a concentration of 0.1-5 weight percent.

43. Composition according to claim 42, wherein the thickener is present in a concentration of 0.5-2 weight percent.

44. Composition according to claim 43, wherein the thickener is present in about 1 weight percent.

45. Method for the preparation of a spray-pumpable composition for topical use, comprising the steps of

a) preparing a lipophilic phase comprising at least one active ingredient and optional additives;
b) preparing an aqueous phase comprising hydrophilic silicon dioxide and optional additives,

wherein the lipophilic and/or hydrophilic phase comprises an emulsifier, and,

c) mixing the lipophilic phase of step a)with the aqueous phase of step b)to obtain the spray-pumpable composition.

46. Method according to claim 45, wherein the composition as obtained is a suspension in an emulsion.

47. Method according to claim 46, wherein the composition as obtained is a suspension in an oil-in water emulsion.

48. Method according to any one of claims 45-47, wherein the hydrophilic silicon dioxide has a specific surface area of between 130 and 380 m^2/g.

49. Method according to claim 48, wherein the hydrophilic silicon dioxide has a specific surface area of between 150 and 300 m^2/g.

50. Method according to claim 49, wherein the hydrophilic silicon dioxide has a specific surface area of between 175 and 225 m^2/g.

51. Method according to claim 50, wherein the hydrophilic silicon dioxide has a specific surface area of around 200 m^2/g.

52. Method according to any of the claims 45-51, wherein the active ingredient of step a) is selected from zinc oxide, titanium dioxide, a steroid hormone, a corticosteroid hormone, an antimicrobial agent, an antibacterial agent, an antifungal agent, an antibiotic or any combination thereof.

53. Method according to any of the claims 45-52, wherein the zinc oxide of step a) is added as a zinc oxide-in-oil formulation.

54. Method according to claim 53, wherein the zinc oxide-in-oil formulation comprises zinc oxide particles in a concentration of 40-65 weight percent.

55. Method according to claim 54, wherein the zinc oxide-in-oil formulation comprises zinc oxide particles in a concentration of 50-65 weight percent.

56. Method according to claim 55, wherein the zinc oxide-in-oil formulation comprises zinc oxide particles in a concentration of about 60 weight percent.

57. Method according to any one of claims 53-56, wherein zinc oxide particles are added to the aqueous phase of step b) in such an amount that the composition as obtained comprises an additional 5 weight percent zinc oxide.

58. Method according to any of the claims 45-57, wherein the steroid hormone, the corticosteroid hormone, an antimicrobial agent, an antibacterial agent, an antifungal agent, an antibiotic or any combination thereof are added to the lipophilic phase as a dispersion in propylene glycol.

59. Composition according to any of the claims 1-44 or obtainable by the method of any of the claims 45-58 for use in the treatment of a topical skin disorder in a mammal.

60. Composition according to claim 59, wherein the topical skin disorder is a rash, sun burn, eczema, an inflammation or an infection.

61. Composition according to claim 60, wherein the topical skin disorder is a diaper rash.

62. Composition according to any one of claims 59-61 for use in the treatment of a topical skin disorder in a human being.

63. Use of unbound hydrophilic silicon dioxide particles for increasing the amount of at least one active ingredient in a composition for topical use, wherein the composition is spray-pumpable.

64. Use according to claim 63, wherein the composition is a suspension in an oil-in-water emulsion.