

CLAIMS

5 What is claimed is:

1. A method of making a low-viscosity, substantially clear or translucent lubricant composition comprising:

10 a) slowly adding water with gentle mixing to a silicone lubricant, at least one non-ionic surfactant component, and a hydrophilic rheology modifier to form a water-in-silicone emulsion;

15 b) combining water and a glycol with the viscous water-in-silicone emulsion with mixing for a sufficient time to invert the viscous water-in-silicone emulsion to a silicone-in-water emulsion, thereby forming a stable, low viscosity, silicone-in-water lubricant composition; and

20 c) optionally adding an effective amount of a refractive index (RI) adjustment agent ("RIAA") to the low viscosity, clear silicone-in-water lubricant emulsion composition to obtain a substantially clear or translucent emulsion.

25 2. The method of claim 1, wherein the silicone-in-water emulsion obtained in step b) contains silicone phase droplets having an average droplet size greater than about 99 nm and less than about one micrometer in size.

30 3. The method of claim 1 or 2, wherein at least one non-ionic surfactant component is selected from the group consisting of polyalkylene glycol alkyl ethers; glucoside alkyl ethers;

polyethylene glycol alkylphenyl ethers, glycerol alkyl esters; polyoxyethylene glycol sorbitan alkyl esters; sorbitan alkyl esters; an alkyl polyglucoside; alkylamide ethanolamines; alkane alkylamine oxides; block copolymers of polyethylene glycol and
5 polypropylene glycol; polyethoxylated fatty acid amines; and ethoxylated aliphatic alcohols.

4. The method of claim 1 or 2 wherein at least one non-ionic surfactant component is selected from the group consisting
10 of: a Brij 4™ surfactant; a Brij™ 35 surfactant; C12-13 Pareth-23; C12-13-Pareth-4; Cetomacrogol™ 1000; C11-15 Pareth-7; Trideceth-6; decyl glucoside; decyl polyglucose; glycerol monostearate; IGEPAL™ CA-630; isoceteth-20; lauryl glucoside; maltosides; monolaurin; mycoosubtilin; narrow-range ethoxlate;
15 Nonidet™ P-40; nonoxynols; NP™-40; octaethylene glycol monodoceyl ether; N-octyl beta D-thioglucopyranoside; octyl glucoside; oleyl alcohol; PEG-10 sunflower glycerides; pentaethylene glycol monodecyl ether; polidocanol; poloxamers; poloxamer 407; polyethoxylated tallow amine; polyglycerol
20 polyricinoleate; polysorbate; polysorbate 20; polysorbate 80; sorbitan; sorbitan monolaurate; sorbitan monostearate; sorbitan tristearate; stearyl alcohol; surfactin; Tritons; Triton™ X-100; Tween™; and Tween™ 80.

25 5) The method of claim 1 or 2 wherein the at least one non-ionic surfactant comprises two different fatty alcohol ethoxylate surfactant components.

6) The method of claim 1 or 2 wherein the at least one
30 non-ionic surfactant comprises two different non-ionic surfactant components.

7) The method of any of the foregoing claims wherein the non-ionic surfactant comprises two different fatty alcohol ethoxylate surfactant components present in an effective amount of about 1% to about 6% by weight of the silicone-in-water emulsion.

8) The method of any of the foregoing claims, wherein the rheology modifier is present in an effective amount of about 0.1% to about 1% by weight of the silicone-in-water emulsion.

9) The method of claim 6, wherein a non-ionic surfactant component comprises at least one of (A) a first polymeric material made from a polyoxyethylene alkyl alcohol containing from 2 to 12 ethylene glycol units and (B) a second polymeric material made from a polyoxyethylene alkyl alcohol containing from 12 to 100 ethylene glycol units.

10) The method of claim 6 wherein said non-ionic surfactant component comprises (A) a first polymeric material made from a polyoxyethylene alkyl alcohol containing from 2 to 12 ethylene glycol units and (B) a second polymeric material made from a polyoxyethylene alkyl alcohol containing from 12 to 50 ethylene glycol units.

11) The method of any foregoing claim, wherein said one non-ionic surfactant component comprises at least one polymeric material made from a polyoxyethylene lauryl alcohol.

12) The method of any foregoing claim, wherein said one non-ionic surfactant component comprises at least two different polymeric materials made from a polyoxyethylene alkyl alcohol.

5 13) The method of any foregoing claim, wherein said one non-ionic surfactant component comprises a first ethoxylated lauryl alcohol, containing 4 ethylene glycol units; and a second ethoxylated lauryl alcohol containing 23 ethylene glycol units.

10 14) The method of claim 9 wherein at least one of (A) and (B) is present in an effective amount of about 1% to about 6% by weight of the silicone-in-water emulsion.

15 15) The method of claim 9 wherein both (A) and (B) are present in a combined effective amount of about 1% to about 6% by weight of the silicon-in-water emulsion.

20 16) The method of claim 7, wherein the rheology modifier is present in an effective amount of about 0.1% to about 1% by weight of the silicone-in-water emulsion.

25 17) The method of any foregoing claim, wherein the RIAA has a higher refractive index than the water phase prior to step c) and is present in an amount in the emulsion to increase the clarity of the silicone-in-water emulsion for use as a lubricant in intimate care applications.

30 18) The method of any foregoing claim, wherein the RIAA has a lower refractive index than the water phase prior to step c) and is present in an amount in the emulsion effective to

increase the clarity of the silicone-in-water emulsion for use as a lubricant in intimate care applications.

19) The method of any foregoing claim, wherein the RIAA is
5 supplied so that the silicone-in-water emulsion includes about 1% by weight to about 40% by weight of the RI adjustment agent.

20) The method of any foregoing claim, wherein the
silicone droplets in the silicone-in-oil emulsion have an
10 average size of above about 200 nm and below about 700 nanometers.

21) A low-viscosity, substantially clear or translucent
silicone-in-water emulsion composition comprising an amount of
15 water and,
about 0.1% to about 1% by weight of a rheology
modifier,
about 1% to about 6% by weight of a non-ionic
surfactant component;
20 about 15% to about 60% by weight of one or more
silicone lubricants; and
an amount of one or more water-miscible refractive
index (RI) adjusting agent sufficient to render the composition
substantially clear or translucent; the low-viscosity,
25 substantially clear or translucent silicone-in-water emulsion
composition being effective as a lubricant suitable for use in
intimate care applications.

22) The silicone-in-water emulsion composition of claim 21
30 which includes silicone droplets having an average diameter

greater than about 99 nanometers and less than about 1 micrometer.

23) The silicone-in-water emulsion composition of either
5 of claims 21 or 22 wherein the one or more silicone lubricants
is or are selected from the group consisting of dimethicone
fluids, dimethicone gums, dimethiconol fluids, dimethiconol
gums, silicone crosspolymers, silicone elastomers, ethoxylated
dimethicone fluids, phenyl silicones, alkyl silicones, alkyl
10 silanes, and mixtures thereof.

24) The silicone-in-water emulsion composition of any of
claims 21-23 wherein the one or more silicone lubricants
comprise about 15% to about 40% by weight of the composition and
15 the RIAA comprises about 15% to about 30% by weight of the
composition.

25) The silicone-in-water emulsion composition of any of
claims 21-23 wherein the refractive indices of the silicone
20 phase and the hydrophilic phase are substantially the same.

26) A low-viscosity, substantially clear or translucent
silicone-in-water emulsion comprising:
about 15% to about 60% by weight of one or more
25 silicone lubricants;
about 1% to about 6% by weight of at least one non-
ionic surfactant;
about 0.1% to about 0.8% by weight of a rheology
modifier component;
30 a sufficient quantity of one or more water-soluble
RIAA other than water to cause the refractive index of the water

phase to substantially match the refractive index of the silicone phase of the composition; and

water in a sufficient quantity so that the composition totals 100% by weight, the composition being suitable for use as
5 a lubricant in one or more intimate care applications.

26. The emulsion of claim 25 wherein the sufficient quantity of one or more RIAA is in the range of about 10% to about 40% by weight of the composition.

10

27. The emulsion of either of claims 25 or 26 wherein the emulsion has an average silicone droplet size greater than 99 nm and less than 999 nanometers.

15 28. The silicone-in-water emulsion of claim 27 wherein the emulsion has an average silicone droplet size between about 99 nm and about 500 nanometers.

29. The silicone-in-water emulsion of claim 27 wherein the
20 emulsion has an average silicone droplet size between about 200 nm and about 400 nm.

30. A condom product comprising packaging containing a condom and the composition of any of claims 21-29.

25

31. Use of the silicone-in-water emulsion of any of claims 21-29 as a surgical lubricant.

32. Use of the silicone-in-water emulsion of any of claims
30 21-29 as a skin treatment composition.

33. A pharmaceutical or cosmetic composition comprising the silicone-in-water emulsion of any of claims 21-29 and an additional pharmaceutical or cosmetically active ingredient.

5 34. A pharmaceutical or cosmetic composition comprising the silicone-in-water emulsion of any of claims 21-29 and an additional pharmaceutical or cosmetically active ingredient selected from the group consisting of a hormone component, an antimicrobial component, an antibacterial component, an
10 antibiotic component, an antiviral component, a non-steroidal anti-inflammatory component, a spermicide component, an immunodilator component, an anesthetic component, a plant extract component, a vitamin component, a corticosteroid component, and an antifungal component and the like, and
15 mixtures thereof.