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(54) **LIQUID DETERGENT COMPOSITION COMPRISING SILICONE**

FLÜSSIGE REINIGUNGSMITTELZUSAMMENSETZUNG ENTHALTEND SILIKON

COMPOSITION DÉTERGENTE LIQUIDE COMPRENANT SILICONE

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• **CABREJOS CARACCILO W: "Novel Fabric Softener Technology for Superior Benefits", SOFW JOURNAL,, vol. 141, no. 10, 1 January 2015 (2015-01-01), pages 22-25, XP001596415,**

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Description

[0001] The present invention relates to liquid laundry compositions comprising silicone additives. More particularly the present invention relates to the use of silicone additives in liquid laundry compositions to increase the whiteness of laundered fabrics, as well as to improve their ease of ironing, hydrophilicity, and softness.

[0002] Clothing is a background feature of modern life. A principle issue with the use of clothing is that in wearing it attracts dirt / soil; both from a wearer and their surroundings.

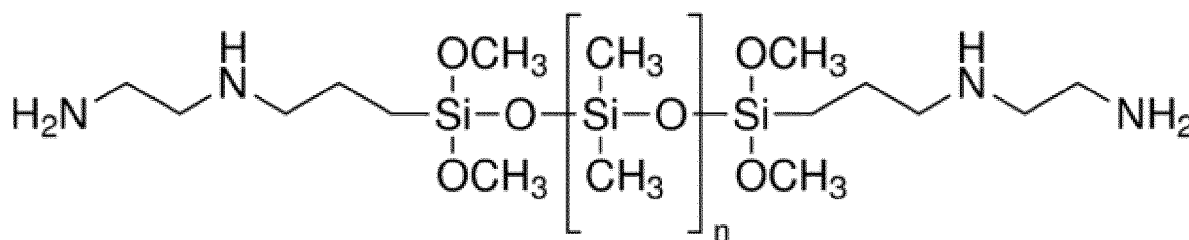
[0003] Laundry detergent compositions that both clean and soften fabric during a laundering process are known and have been developed and sold by laundry detergent manufacturers for many years. Typically, these laundry detergent compositions comprise components that are capable of providing a fabric-softening benefit to the laundered fabric; these fabric-softening components include silicones.

[0004] Such washing is of course beneficial but one major issue is that whilst washing cleans and refreshes clothes; soiling in use is still inevitable. It would be greatly beneficial if there could be found a way to prevent / slow soiling of garments when they are worn. It would be supremely beneficial if one single composition could be identified which could address this prevention concern as well as providing excellent washing. Some liquid laundry detergent compositions comprising silicones are disclosed US 2006/003913 A1, US 2005/233938 A1, WO 2004/050813 A1, WO 03/097778 A1, WO 2009/127590 A1, WO 2010/074810 A1, WO 2008/152602 A1, US 2012/004156 A1, WO 2005/042829 A1 and US 7 049 276 B2.

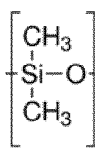
[0005] It is an object of the present invention to address these problems.

[0006] According to a first aspect of the invention there is provided a composition comprising:

A) a liquid detergent product; and B) a silicone additive comprising:



wherein the silicone additive comprises at least 80 mole percent of units



[0007] The liquid detergent product may comprise a laundry detergent product, a carpet detergent product, a hard surface (such as dishware) detergent product.

[0008] The present invention is directed to a method for laundering a textile fabric comprising washing said fabric in the presence of the above composition.

[0009] The present invention relates to the inclusion of a silicone additive in a liquid laundry product to impart increased whiteness, ease of ironing, and softness to the laundered article.

[0010] The benefits are delivered to the laundered items either during the wash cycle or the rinse cycle of the wash procedure. The silicone additives improve the properties of detergent compositions and rinse cycle additives. Such additives render the fabric, especially 100 percent cotton will and terry cloth, whiter and brighter than fabrics treated with liquid laundry compositions that do not contain these silicone additives. This increase in whiteness can be detected both visually and spectrophotometrically (reflectance) as measured by a Hunter Colorimeter. In addition, fabrics treated with these silicone additives in liquid laundry compositions require less effort to iron, and are softer to the touch than do those treated with liquid laundry compositions that do not contain these additives.

[0011] Further benefits include the facilitation of removal of greasy stains; especially on synthetic fabrics. This is postulated to be due to the higher oil repellency given by the formula; particularly on synthetic fibres. A yet further benefit includes colour fixing. In this regard it has been observed that when formula is applied directly (e.g. on a coloured fibrous material) and left for a period such as 24hrs, the colour of the garment is darkened (revived very visibly). It has also

been found that a similar effect can be obtained after 10 repeated washing cycles using the formulation in the rinse cycle.

[0012] Similar benefits have also been noticed when the composition has been used when applied to carpets, hard surfaces (such as dishware).

[0013] The amount of silicone additive employed in the composition of this invention is from 0.01 wt. percent to 25 wt. percent, and more preferably, from 0.1 wt. percent to 10 wt. percent.

[0014] The viscosity of the polyorganosiloxanes (P) is preferably at least 1 and particularly at least 10 mPa.s and preferably at most 100 000 and particularly at most 10 000 mPa.s at 25 degrees centigrade

[0015] The polyorganosiloxanes (P) are obtainable via known chemical processes such as, for example, hydrolysis or equilibration.

[0016] Other silicones may also be present.

Other silicones include a Polyorganosiloxane-Silicone Resin Mixture

[0017] The polyorganosiloxane-silicone resin mixture comprises between about 50 percent to about 99.9 percent by weight of the mixture, of one or more polyorganosiloxane fluid compounds, at least about 0.01 percent by weight of the mixture, of one or more silicone resins, and a maximum of about 5 percent by weight of the mixture, of water. Certain embodiments of the polyorganosiloxane-silicone resin mixture may comprise between about 75 percent to about 98 percent of the polyorganosiloxane fluid compounds. Other embodiments may comprise between about 80 percent to about 90 percent, or alternatively between about 80 percent to about 87 percent of the polyorganosiloxane fluid compounds. Additionally, certain embodiments of the polyorganosiloxane-silicone resin mixture may comprise between about 0.1 percent and 50 percent, or between about 2 percent and about 30 percent of the silicone resins. Other embodiments of the mixture may comprise between about 5 percent and about 20 percent of the silicone resins.

[0018] The viscosity of the polyorganosiloxane fluid compounds is at least about 1 mPa.s at 25 degrees centigrade, especially at least about 10 mPa.s, and has a maximum of about 100,000, especially at least about 10,000 mPa.s, Certain embodiments of the polyorganosiloxane fluid compound have a viscosity of at least about 100 mPa.s and a maximum of 5,000 mPa.s, at 25 degrees centigrade

[0019] Each of the one or more silicone resins of the polyorganosiloxane-silicone resin mixture contains at least 80 mol percent of unit



in which R^{10} means monovalent hydrocarbon residues with 1 carbon atom: Certain useful embodiments of the polyorganosiloxane-silicone resin mixture may comprise silicone resins comprising at least about 90 percent, at least about 95 percent, or at least about 98 percent of unit of general formula VIII.

[0020] The carrier of the surface treatment composition may be any known material, generally, but not necessarily, a liquid useful in delivering the polyorganosiloxane-silicone resin mixture to the surface which is desired to be treated. The carrier may be as simple as a single component delivery vehicle such as water or alcohol which would allow the mixture to be sprayed onto a surface. Alternatively, the carrier may be complex such as a cleaning composition such as a laundry detergent where the mixture would be applied in conjunction with the other beneficial uses of the complex carrier.

[0021] Preferably the composition comprises a wax component.

[0022] It has been observed that the wax component is able to improve the performance of the composition, especially with regard to stain repellency performance. Without wishing to be bound by theory it is postulated that the presence of the wax component aids the deposition and / or integration of the silicone component into/onto the fabric.

[0023] Preferably the wax component is present in the composition in an amount of from 0.1 to 20wt%, more preferably from 1 to 15wt%, more preferably from 2 to 10wt% and most preferably from 4 to 8 wt%.

[0024] Preferably the wax component is present in a ration of from 10:1 to 1:10; more preferably from 5:1 to 1:5, more preferably from 3:1 to 1:3; most preferably from 2:1 to 1:2; by weight with reference to the silicone component

[0025] Preferred wax components include hydrocarbon oils and edible oils such as vegetable and / or nut oils such as olive oil, sunflower oil, maize oil, rape oil, soya oil, peanut oil, meadowfoam seed oil, linseed oil, walnut oil, sesame oil and thistle oil. Mixtures of more than wax component may be used.

[0026] Generally the wax component is modified / derivatized such that it is not completely apolar. Preferred moieties for use in derivatization include anionic and / or cationic groups. The wax component may contain one or more derivatization moieties. Preferred derivatisation moieties include ammonium, carboxylate, sulphate, sulphite, sulphonate, nitrate, halogen groups.

[0027] As certain wax components have poor solubility in water the wax component may be employed in the formulation in a form that aids its incorporation. Preferred forms include one or more of suspension, encapsulation and / or emulsification. To achieve this incorporation auxiliary agents such as solvents and / or surfactants may be employed.

[0028] Most preferably the hydrophobic component comprises a derivatized paraffin oil (a hydrocarbon having a boiling

range of 140 to 300 degrees centigrade - otherwise known as kerosene).

[0029] A preferred ingredient comprises melaminic paraffin (a melamine and / or derivative thereof (such as an alkylated derivative) in paraffin oil). A preferred example of this is Freepel 1200 BASE (available from Emerald Performance Materials). Another example of this is a fatty acid melamine and paraffin wax emulsion and a poly(vinyl alcohol) (such as described in In WO 02/14426). A yet further preferred example includes Arkophob FL 2150 available from Clariant.

[0030] Optionally the composition comprises from 0.001 percent to 99.99 percent, preferably 0.001 percent to 20 percent, preferably 4 percent to 18 percent, e.g. most preferably about 4.5 percent or 13 percent, by weight, of bleach. The bleach is preferably peroxide bleach, most preferably hydrogen peroxide. Peroxide sources other than H_2O_2 can be used.

[0031] Preferably the composition comprises a surfactant. Where present the composition comprises from 0.001 percent to 99.99 percent, preferably 0.05 percent to 40 percent, preferably 10 percent to 30 percent, e.g. about 25 percent, by weight of surfactant.

[0032] The surfactant is, for example, an anionic or nonionic surfactant or mixture thereof (most preferably a nonionic surfactant). The nonionic surfactant is preferably a surfactant having a formula $RO(CH_2CH_2O)_nH$ where- in R is a mixture of linear, even carbon-number hydrocarbon chains ranging from $C_{12}H_{25}$ to $C_{16}H_{33}$ and n represents the number of repeating units and is a number of from about 1 to about 12. Examples of other non-ionic surfactants include higher aliphatic primary alcohol containing about twelve to about 16 carbon atoms which are condensed with about three to thirteen moles of ethylene oxide. Other examples of nonionic surfactants include primary alcohol ethoxylates (available under the Neodol trade name from Shell Co.), such as Cn alkanol condensed with 9 moles of ethylene oxide (Neodol 1-9), C₁₂-13 alkanol condensed with 6.5 moles ethylene oxide (Neodol 23-6.5), C₁₂-13 alkanol with 9 moles of ethylene oxide (Neodol 23- 9), C₁₂-15 alkanol condensed with 7 or 3 moles ethylene oxide (Neodol 25-7 or Neodol 25-3), C₁₄-15 alkanol condensed with 13 moles ethylene oxide (Neodol 45-13), Cg-n linear ethoxylated alcohol, averaging 2.5 moles of ethylene oxide per mole of alcohol (Neodol 91-2.5), and the like.

[0033] Other examples of nonionic surfactants suitable for use in the present invention include ethylene oxide condensate products of secondary aliphatic alcohols containing 11 to 18 carbon atoms in a straight or branched chain configuration condensed with 5 to 30 moles of ethylene oxide. Examples of commercially available non-ionic detergents of the foregoing type are Cn-15 secondary alkanol condensed with either 9 moles of ethylene oxide (Tergitol 15-S-9) or 12 moles of ethylene oxide (Tergitol 15-S-12) marketed by Union Carbide, a subsidiary of Dow Chemical. Octylphenoxy polyethoxyethanol type nonionic surfactants, for example, Triton X-100, as well as amine oxides can also be used as a nonionic surfactant in the present invention. Other examples of linear primary alcohol ethoxylates are available under the Tomadol trade name such as, for example, Tomadol 1-7, a Cn linear primary alcohol ethoxylate with 7 moles EO; Tomadol 25-7, a C₁₂-C₁₅ linear primary alcohol ethoxylate with 7 moles EO; Tomadol 45-7, a C₁₄-C₁₅ linear primary alcohol ethoxylate with 7 moles EO; and Tomadol 91-6, a Cg-Cn linear alcohol ethoxylate with 6 moles EO.

[0034] Other examples of linear primary alcohol ethoxylates are available under the Lutensol trade name such as, for example, Lutensol A3N, a C₁₃-15 linear primary alcohol ethoxylate with 3 moles EO; Lutensol LA60, a C₁₃-15 linear primary alcohol ethoxylate with 7 moles EO. Also Genapol such as, for example, Genapol LA3, a C₁₃-15 linear primary alcohol ethoxylate with 3 moles EO; Genapol LA070, a C₁₃-15 linear primary alcohol ethoxylate with 7 moles EO

[0035] Tomadol 45-7, a C₁₄-C₁₅ linear primary alcohol ethoxylate with 7 moles EO; and Tomadol 91-6, a Cg-Cn linear alcohol ethoxylate with 6 moles EO.

[0036] Other nonionic surfactants are amine oxides, alkyl amide oxide surfactants. Preferred anionic surfactants are frequently provided as alkali metal salts, ammonium salts, amine salts, amino- alcohol salts or magnesium salts. Contemplated as useful are one or more sulfate or sulfonate compounds including: alkyl benzene sulfates, alkyl sulfates, alkyl ether sulfates, alkylamidoether sulfates, alkylaryl polyether sulfates, monoglyceride sulfates, alkyl- sulfonates, alkylamide sulfonates, alkylarylsulfonates, olefinsulfonates, paraffin sulfonates, alkyl sulfosuccinates, alkyl ether sulfosuccinates, alkylamide sulfosuccinates, alkyl sulfosuccinamate, alkyl sulfoacetates, alkyl phosphates, alkyl ether phosphates, acyl sarcosinates, acyl isethionates, and N-acyl taurates. Generally, the alkyl or acyl radical in these various compounds comprise a carbon chain containing 12 to 20 carbon atoms.

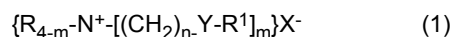
[0037] Other surfactants which may be used are alkyl naphthalene sulfonates and acyl / oleoyl sarcosinates and mixtures thereof.

[0038] Preferably the composition comprises a fabric softening active (FSA) or a mixture of more than one FSAs. In one embodiment, the composition comprises at least about 1 percent, alternatively at least about 2 percent, alternatively at least about 3 percent, alternatively at least about 4 percent, alternatively at least about 5 percent, alternatively at least about 6 percent, alternatively at least about 7 percent, alternatively at least about 8 percent, alternatively at least about 9 percent, alternatively at least about 10 percent, and alternatively at least about 12 percent, and less than about 90 percent, alternatively less than about 40 percent, alternatively less than about 30 percent, alternatively less than about 20 percent, alternatively less than about 18 percent, alternatively less than about 15 percent, of said FSA, by weight of the composition. In one embodiment, the FSA is cationic. (all percentages by weight).

[0039] Without wishing to be bound by theory it is postulated that the fabric softening active aids silicone deposition

(as well as providing a softening function).

[0040] One suitable FSA comprises compounds of the formula



wherein each R substituent is either hydrogen, a short chain C_1-C_6 , suitably C_1-C_3 alkyl or hydroxyalkyl group, e.g., methyl, ethyl, propyl, hydroxyethyl, and the like, poly(C_{2-3} alkoxy), suitably polyethoxy, benzyl, or mixtures thereof, each m is 2 or 3; each n is from 1 to about 4, suitably 2; each Y is $-O-(O)C-$, $-C(O)-O-$, $-NR-C(O)-$, or $-C(O)-NR-$; the sum of carbons in each R^1 , plus one when Y is $-O-(O)C-$ or $-NR-C(O)-$, is $C_{12}-C_{22}$, suitably $C_{14}-C_{20}$, with each R^1 being a hydrocarbyl, or substituted hydrocarbyl group, and X^- can be any softener-compatible anion, such as chloride, bromide, methylsulfate, ethylsulfate, sulfate, and nitrate.

[0041] A second suitable FSA has the general formula:



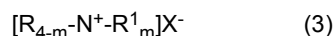
wherein each Y, R, R^1 , and X^- have the same meanings as before. Such compounds include those having the formula:



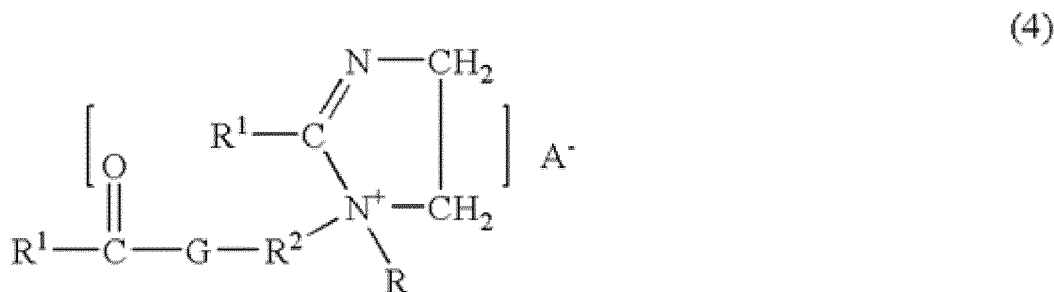
wherein each R is a methyl or ethyl group and suitably each R^1 is in the range of C_{15} to C_{19} . When the diester is specified, it can include the monoester that is present.

[0042] These types of agents and general methods of making them are disclosed in U.S. Pat. No. 4,137,180, Naik et al., issued Jan. 30, 1979. An example of a suitable DEQA (2) is the "propyl" ester quaternary ammonium fabric softener active having the formula 1,2-di(acyloxy)-3-trimethylammoniopropane chloride.

[0043] A third suitable FSA has the formula:

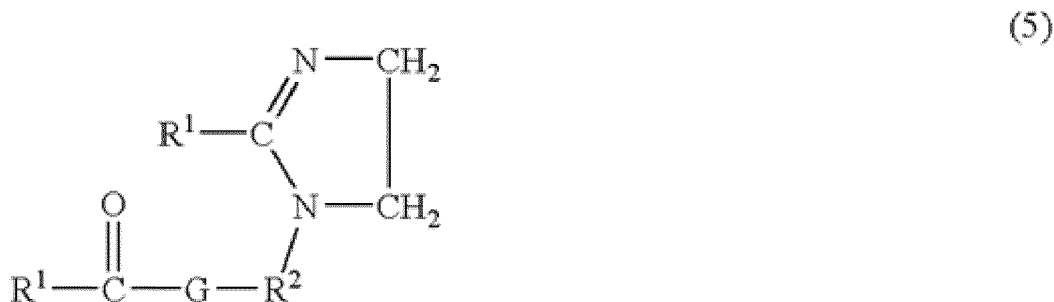


[0044] A fourth suitable FSA has the formula:



wherein each R, R^1 , and A have the definitions given above; each R^2 is a C_{1-6} alkylene group, suitably an ethylene group; and G is an oxygen atom or an $-NR-$ group.

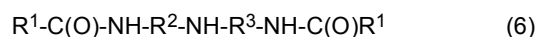
[0045] A fifth suitable FSA has the formula:



wherein R^1 , R^2 and G are defined as above.

[0046] A sixth suitable FSA comprises condensation reaction products of fatty acids with dialkylenetriamines in, e.g.,

a molecular ratio of about 2:1, said reaction products containing compounds of the formula:



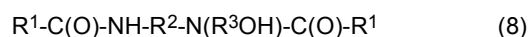
wherein R^1 , R^2 are defined as above, and each R^3 is a C_{1-6} alkylene group, suitably an ethylene group and wherein the reaction products may optionally be quaternized by the additional of an alkylating agent such as dimethyl sulfate. Such quaternized reaction products are described in additional detail in U.S. Pat. No. 5,296,622, issued Mar. 22, 1994 to Uphues et al.

[0047] A seventh suitable FSA has the formula:



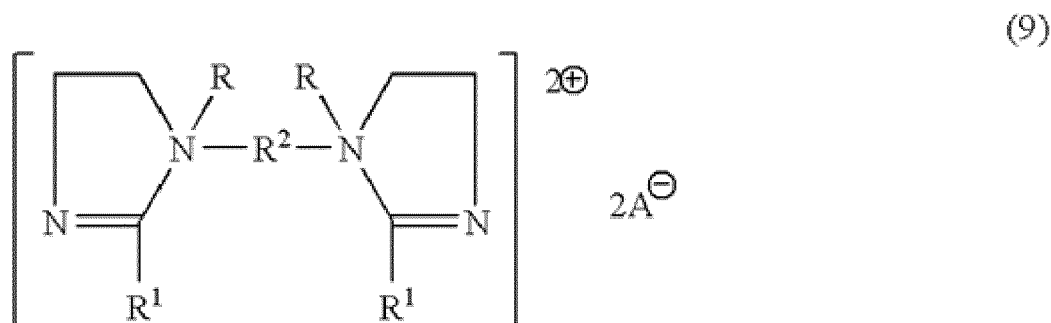
wherein R , R^1 , R^2 , R^3 and A^- are defined as above.

[0048] An eighth suitable FSA comprises reaction products of fatty acid with hydroxyalkylalkylenediamines in a molecular ratio of about 2:1, said reaction products containing compounds of the formula:



wherein R^1 , R^2 and R^3 are defined as above.

[0049] A ninth suitable type of FSA has the formula:



wherein R , R^1 , R^2 , and A^- are defined as above.

[0050] Non-limiting examples of compound (1) are N,N-bis(stearoyl-oxy-ethyl) N,N-dimethyl ammonium chloride, N,N-bis(tallowoyl-oxy-ethyl) N,N-dimethyl ammonium chloride, N,N-bis(stearoyl-oxy-ethyl) N-(2 hydroxyethyl) N-methyl ammonium methylsulfate, Bis (acyloxyethyl) hydroxyethyl Methyl ammonia Methyl sulphate

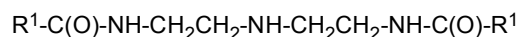
[0051] Non-limiting examples of compound (2) is 1,2di(stearoyl-oxy) 3 trimethyl ammoniumpropane chloride.

[0052] Non-limiting examples of compound (3) are dialkylenedimethylammonium salts such as dicanoladimethylammonium chloride, di(hard)tallowdimethylammonium chloride dicanoladimethylammonium methylsulfate. An example of commercially available dialkylenedimethylammonium salts usable in the present invention is dioleyldimethylammonium chloride available from Witco Corporation under the trade name Adogen(R) 472 and dihardtallow dimethylammonium chloride available from Akzo Nobel Arquad 2HT75.

[0053] A non-limiting example of compound (4) is 1-methyl-1-stearoylamidoethyl-2-stearoylimidazolinium methylsulfate wherein R^1 is an acyclic aliphatic $C_{15}-C_{17}$ hydrocarbon group, R^2 is an ethylene group, G is a NH group, R^5 is a methyl group and A is a methyl sulfate anion, available commercially from the Witco Corporation under the trade name Varisoft(R).

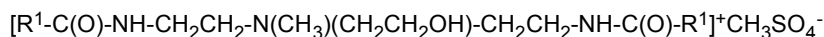
[0054] A non-limiting example of compound (5) is 1-tallowylamidoethyl-2-tallowylimidazoline wherein R^1 is an acyclic aliphatic $C_{15}-C_{17}$ hydrocarbon group, R^2 is an ethylene group, and G is a NH group.

[0055] A non-limiting example of compound (6) is the reaction products of fatty acids with diethylenetriamine in a molecular ratio of about 2:1, said reaction product mixture containing N,N-dialkyldiethylenetriamine with the formula:



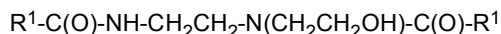
wherein $R^1-C(O)$ is an alkyl group of a commercially available fatty acid derived from a vegetable or animal source, such as Emersol(R) 223LL or Emersol(R) 7021, available from Henkel Corporation, and R^2 and R^3 are divalent ethylene groups.

[0056] A non-limiting example of compound (7) is a difatty amidoamine based softener having the formula:



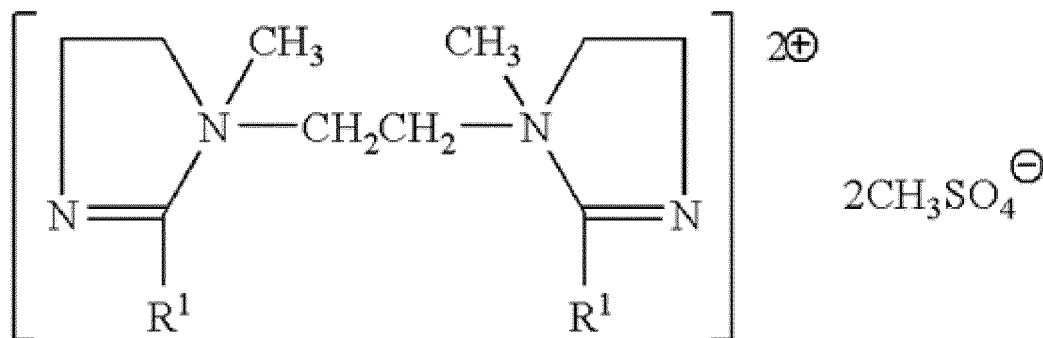
wherein $R^1-C(O)$ is an alkyl group, available commercially from the Witco Corporation e.g. under the trade name Vari-soft(R) 222LT.

[0057] A non-limiting example of compound (8) is the reaction products of fatty acids with N-2-hydroxyethylethylenediamine in a molecular ratio of about 2:1, said reaction product mixture containing a compound of the formula:



wherein $R^1-C(O)$ is an alkyl group of a commercially available fatty acid derived from a vegetable or animal source, such as Emersol(R) 223LL or Emersol(R) 7021, available from Henkel Corporation.

[0058] A non-limiting example of compound (9) is the diquaternary compound having the formula:



wherein R^1 is derived from fatty acid, and the compound is available from Witco Company.

[0059] It will be understood that combinations and mixtures of any of the above types of FSAs disclosed above are suitable for use in this invention.

[0060] In the cationic nitrogenous salts herein, the anion A^- , which is any softener compatible anion, provides electrical neutrality. Most often, the anion used to provide electrical neutrality in these salts is from a strong acid, especially a halide, such as chloride, bromide, or iodide. Other anions can also be used, such as chloride, methylsulfate, ethylsulfate, sulfate, carbonate, and the like. The anion can also carry a double charge in which case A^- represents half a group.

[0061] The composition may include various optional ingredients, such as enzymes, builders, solvents, dye transfer inhibition agents, dye catchers, preservatives, antioxidants, anti-static agents, fragrances, odour absorbing components, optical brighteners, stain release agents, acidifying agents, radical scavengers, alkalizing agents, thickeners (e.g. hydroxyethylcellulose and / or xanthan gum).

[0062] The compositions of the invention may include one or more organic solvents. Without wishing to be bound by theory it is postulated that the solvent aids silicone deposition and / or stain removal.

[0063] Such further organic solvents may include one or more of: alcohols, glycols, acetates, ether acetates, glycerols, as well as polyethylene glycols and glycol ethers. Mixtures of these organic solvents can also be used. Non-limiting examples of useful glycol ethers and examples include those glycol ethers having the general structure $R_a-O-[CH_2-CH(R)-(CH_2-O)]_n-H$, wherein R_a is C_{1-20} alkyl or alkenyl, or a cyclic alkane group of at least 6 carbon atoms, which may be fully or partially unsaturated or aromatic; n is an integer from 1 to 10, preferably from 1 to 5; each R is selected from H or CH_3 ; and a is the integer 0 or 1. Specific and preferred solvents are selected from propylene glycol methyl ether, dipropylene glycol methyl ether, tripropylene glycol methyl ether, propylene glycol n -propyl ether, ethylene glycol n -butyl ether, diethyleneglycol n -butyl ether, diethylene glycol methyl ether, propylene glycol, ethylene glycol, diethylene glycol monoethyl ether acetate and the like. When present such one or more organic solvents may be present in any effective amount, preferably in amounts of between about 0.001-10 percent wt., and preferably between about 0.01-5 percent wt. of the composition.

[0064] The invention is illustrated with reference to the following non-limiting examples.

[0065] Working examples A mix of 3.5kg of cotton and polyester/cotton swatches washed in a European washing machine with a standard cotton 40°C cycle, dosing various solutions during the rinse cycle.

[0066] All examples use parts by weight unless stated otherwise.

A - Paraffin Inclusion

[0067] The following solutions were tested using the cycle above with 68g of detergent dosed into the wash cycle and 60ml of the formula below added to the rinse cycle.

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Raw Material Description	A1	A2
Deionised Water	To 100	To 100
Silicone ²	7-9	7-9
Paraffin ¹	6-8	0
Biocide	0.2	0.2
Dye 0,1%	5	5
Fragrance	0.67	0.67
Cationic Surfactant	7-9	7-9
	100,00	100,00
¹ in this example and hereafter the term "paraffin" shall be taken to refer to an emulsion of Arkophob FL 2150 available from Clariant which comprises ~30wt% active. ² in this example and hereafter the term "silicone" shall be taken to refer to Poly(dimethyl)[3-((2-aminoethyl)amino)propyl]methylsiloxane, which comprises ~20wt% active.		

[0068] Repellency test method

1. Put 75 µL of water with a micropipette on the surface of the textile gently forming a drop on point 1. Start the timer.
2. Successively, put other 6 drops around the garment (see picture)
3. Record total time when drop is completely absorbed
4. Mean value is done with calculation on standard deviation

Results

[0069]

	Repellency Test Time (Seconds)
A1	31
A2	2

[0070] Here a synergy is seen between the silicone and the paraffin.

B - Variation of Paraffin Ratio

[0071] The following solutions were tested (as in last example)

Raw Material Description	A3	A4
Deionised Water	To 100	To 100
Silicone	4-6	6-8
Paraffin	6-8	3.5-4.5
Biocide	0.2	0.2
Dye 0,1%	5	5
Fragrance	0.67	0.67
Cationic Surfactant	7-9	7-9
	100,00	100,00

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Repellency test Results

[0072]

	Repellency Test Time (Seconds)	
	3.5kg load / 120ml (in rinse)	5kg load / 120ml (in rinse)
A3	81	62
A4	43	16

C - Addition of Solvent

[0073] The following solutions were tested (as in last examples) using the cycle above with 68g of detergent dosed into the wash cycle and 60ml of the formula below added to the rinse cycle.

Raw Material Description	A5	A6
Deionised Water	To 100	To 100
Silicone	4-6	4-6
Paraffin	6-8	6-8
Biocide	0.2	0.2
MonoPropyleneGlycol	0	0.5-1.5
Dye 0,1%	5	5
Fraarance	0.67	0.67
Cationic Surfactant	6-8	6-8
	100,00	100,00

Repellency test Results

[0074]

	Repellency Test Time (Seconds)
	3.5kg load / 60ml
A5	12
A6	37

Stain release

[0075] Parity and Superiority versus detergent alone.

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	A5	A6
BLUEBERRY JUICE (bleach)	P	P
BLUEBERRY JUICE RASO (bleach)	P	P
CAFFE' (bleach)	S	S
CAFFE' RASO (bleach)	P	S
TEA RASO (bleach)	P	S
THE (bleach)	S	S
WINE (bleach)	S	P
WINE RASO (bleach)	P	P
CHOC SYRUP RASO (greasy)	P	P
CHOCOLATE SYRUP (greasy)	P	S
EYE SHADOW (greasy)	P	P
EYE SHADOW RASO (greasy)	P	P
FRENCH MUSTARD (greasy)	P	S
LIPSTICK (greasy)	P	P
LIPSTICK RASO (greasy)	P	S
MAKE UP (greasy)	S	P
MAKE UP RASO (greasy)	P	P
MUD (greasy)	P	S

MUD RASO (greasy)	P	P
MUSTARD (greasy)	S	S
SEBO RASO (greasy)	P	P
SEBUM (greasy)	P	P
SPAGHETTI SAUCE (greasy)	P	P
SPAGHETTI SAUCE RASO (greasy)	P	P

[0076] Improved performance on greasy stains: Chocolate syrup, French mustard, Lipstick and Mud and also some bleachable like Coffee and Tea thanks to the propyleneglycol. It is seen how also the formula without propyleneglycol performs well on water based stains while having some superiorities on greasy stains (make up and mustard) which it is believed are thanks to the contribution of the paraffin.

[0077] These results are particularly surprising. In separate tests the silicone and paraffin did not perform so well (see below).

[0078] A mix of cotton and polyester/cotton swatches washed in a European washing machine with a standard cotton 40°C cycle, dosing the following solutions during the rinse cycle under ideal conditions:

	Solutions	g/L active in the rinse cycle
P1	Not treated (washed only with detergent, nothing added to rinse cycle)	---
P2	Silicone (19.2% solution)	0.672 g/l
P3	Paraffin (30% solution)	0.750 g/l

[0079] Repellency results on water:

	Solutions	Time (Cotton)	Time (Cott/PES)
	Not treated	0	0
	Wacker SLM 21318 19.2% sol.	> 10 min	> 10 min
	Arkophob FL 2150 30% sol.	1 min 10 sec	5 min 10 sec

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[0080] Stain release results after having stained pre-conditioned swatches and washed again only with detergent:
Polyester-Cotton

5		Prod 2 VS Prod 1	Prod 3 VS Prod 1
	chocolate (det)	I	S
	lipstick (det)	I	S
	make up (det)	I	P
10	mud (det)	I	S
	oil with tomato (det)	I	S
	sebum (det)	I	S
	spaghetti sauce (det)	I	S
15	blueberry juice (oxy)	S	S
	coffe (oxy)	P	S
	grass (oxy)	P	S
	tea (oxy)	S	S
20	wine (oxy)	S	S

Cotton

[0081]

25		Prod 2 VS Prod 1	Prod 10 VS Prod 1
	chocolate (det)	S	S
	Lipstick (det)	I	P
30	Make up (det)	I	S
	mud (det)	S	S
	oil with tomato (det)	I	P
	sebum 50% (det)	I	P
35	spaghetti sauce (det)	P	P
	blueberry juice (oxy)	S	S
	coffe (oxy)	S	S
	grass (oxy)	P	S
40	tea (oxy)	S	S
	wine (oxy)	S	S

[0082] Conclusion: Silicone helps on waterbased stains but fixes oily stains, on cotton but also on cotton / PES (fixing is seen by the inferiorities). Paraffin looks to perform well across a wide range of stains (waterbased and oily stains) no matter the kind of swatch. Particularly looks to work well on greasy stains on cotton / PES swatch.

D - Softness evaluation

[0083] A mix of 3.5kg of cotton swatches washed in a European washing machine with a standard cotton 40°C cycle, dosing 68 g of detergent dosed into the wash cycle and 60 ml of various solutions during the rinse cycle.

[0084] The softness was evaluated by a panel of 10 people giving a softness score of 1-10 (1 harsh; 10 soft)

Softness Results

[0085]

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	Softness
Concentrated fabric softener regular dosage	4.4
A6	8.5
A5	8.9

D - Colour evaluation

[0086] A mix of 3.5kg of coloured swatches washed in a European washing machine with a standard cotton 40°C cycle, dosing 65g pf detergent into the wash cycle and 60 ml of various solutions during the rinse cycle.

AISE coloured fabrics used for the test

[0087]

<i>AISE/UMIST set of dyed fabrics:</i>			
Dye class	Fabric n°	Dyes (in brackets information on the chemical structure of the chromophore)	Substrate
Sulphur dyes	1	Sulphur Black	Cotton
Vat dyes	3	Vat Green (benzanthrone)	Cotton
Direct dyes	8	Direct Yellow	Cotton
	20	Reactive Black, pale shade	Cotton
	21	Reactive Black, heavy shade	Cotton
	22	Reactive Orange	Cotton
	24	Reactive Blue B2 (Copper Phtalocyanine)	Cotton
	26	Reactive Violet (Copper containing azo dye)	Cotton
	27	Procion H-EXL Trichromatic Mixture 1	Cotton
	29	Remazol Trichromatic Mixture 3	Cotton
	33	Disperse Navy Mixture (Thiopene azo benzenoid)	Polyester
	39	Acid Red E	Polyamide

[0088] Formulation A5 was used as reference composition. The comparative results were achieved using detergent alone. The swatches conditioned with reference formulation show in 58% of the cases from the AISE Dye set a lower value of dL* (greyness index scale 1/100) which demonstrates that colours become more brilliant and seem to be enhanced and revitalized.

[0089] Results from instrumental evaluation after 10 washes with detergent + reference formulation or detergent alone:

1	Powder detergent		65g
3	Powder detergent + Reference Formulation	IW	65g+60ml

Det 60 ml

1	3
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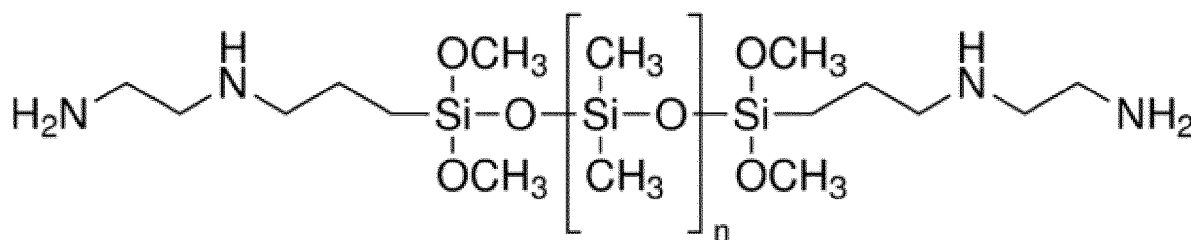
Cotton	dL*	Color 1	-0,895	2,345
Cotton	dL*	Color 3	0,6625	0,8225
Cotton	dL*	Color 8	-0,0025	-0,8375

Cotton	dL*	Color 20	1,78	0,31
Cotton	dL*	Color 21	-0,64	1,7575
Cotton	dL*	Color 22	-0,485	-0,2675
Cotton	dL*	Color 24	0,1975	-0,04
Cotton	dL*	Color 26	1,545	0,993
Cotton	dL*	Color 27	-0,0375	-0,1525
Cotton	dL*	Color 29	-0,485	-0,2675
Polyester	dL*	Color 33	-1,0325	-1,7475
Polyamide	dL*	Color 39	0,54	-0,135

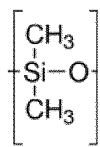
Claims

1. A composition comprising:

A) a liquid detergent product; and B) a silicone additive comprising:



wherein the silicone additive comprises at least 80 mole percent of units



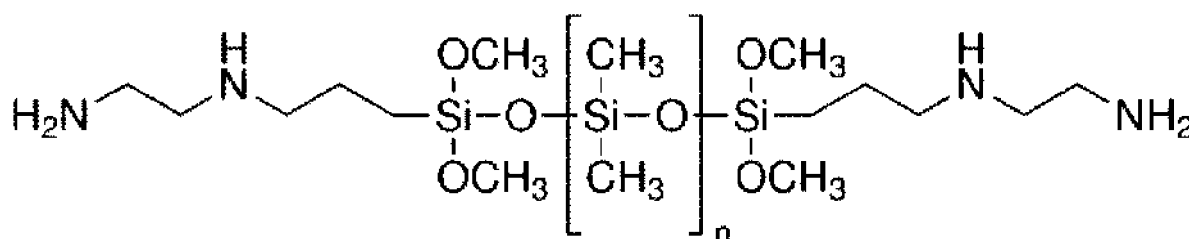
- A composition according to claim 1, wherein the silicone additive is present in an amount of from 1-10wt%, preferably 5wt%.
- A composition according to claim 1 or claim 2, wherein the composition comprises a melaminic paraffin.
- A composition according to claim 3, wherein the melaminic paraffin is present in an amount of from 0.1 to 20wt%.

5. A composition according to any one of the proceeding claims wherein the composition comprises a cationic surfactant.
6. A composition according to claim 5 wherein the composition comprises 8wt% cationic surfactant.
7. A composition according to any one of the proceeding claims wherein the composition comprises one or more organic solvents.
8. A method for laundering a textile fabric comprising washing said fabric in the presence of a composition according to claims 1 to 7.

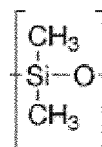
Patentansprüche

1. Zusammensetzung, umfassend:

A) ein flüssiges Reinigungsmittelprodukt; und B) ein Silikonadditiv, das umfasst:



wobei das Silikonadditiv mindestens 80 Molprozent Einheiten



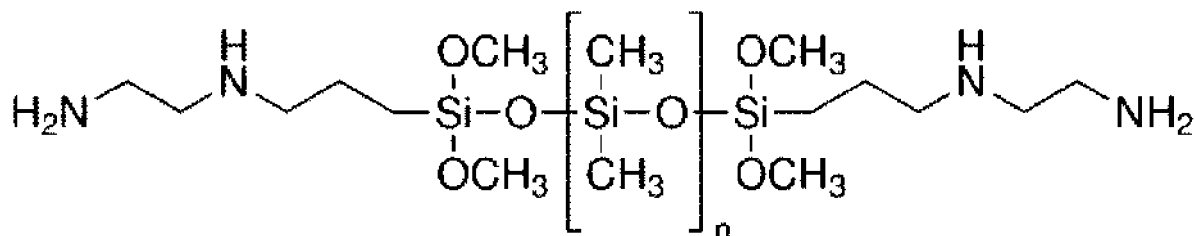
umfasst.

2. Zusammensetzung nach Anspruch 1, wobei das Silikonadditiv in einer Menge von 1-10 Gew.-%, vorzugsweise 5 Gew.-%, vorliegt.
3. Zusammensetzung nach Anspruch 1 oder Anspruch 2, wobei die Zusammensetzung ein melaminisches Paraffin umfasst.
4. Zusammensetzung nach Anspruch 3, wobei das melaminische Paraffin in einer Menge von 0,1 bis 20 Gew.-% vorliegt.
5. Zusammensetzung nach einem der vorstehenden Ansprüche, wobei die Zusammensetzung ein kationisches Tensid umfasst.
6. Zusammensetzung nach Anspruch 5, wobei die Zusammensetzung 8 Gew.-% kationisches Tensid umfasst.
7. Zusammensetzung nach einem der vorstehenden Ansprüche, wobei die Zusammensetzung ein oder mehrere organische Lösungsmittel umfasst.
8. Verfahren zum Waschen eines Textilgewebes, umfassend das Waschen des Gewebes in Gegenwart einer Zusammensetzung nach den Ansprüchen 1 bis 7.

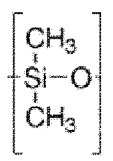
Revendications

1. Composition comprenant :

A) un produit détergent liquide ; et B) un adjuvant à base de silicone comprenant :



où l'adjuvant à base de silicone comprend au moins 80 % en mole de motifs



2. Composition selon la revendication 1, où l'adjuvant à base de silicone est présent dans des quantités comprises entre 1 % et 10 % en poids, de préférence 5 % en poids.
3. Composition selon la revendication 1 ou 2, où la composition comprend une paraffine mélaminique.
4. Composition selon la revendication 3, où la paraffine mélaminique est présent dans des quantités comprises entre 0,1 % et 20 % en poids.
5. Composition selon l'une quelconque des revendications précédentes, où la composition comprend un tensioactif cationique.
6. Composition selon la revendication 5, où la composition comprenant 8 % en poids de tensioactif cationique.
7. Composition selon l'une quelconque des revendications précédentes, où la composition comprend au moins un solvant organique.
8. Procédé de nettoyage d'un tissu textile comprenant le lavage dudit tissu en présence d'une composition selon les revendications 1 à 7.

REFERENCES CITED IN THE DESCRIPTION

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