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(54) **Homogeneous concentrated liquid detergent compositions containing ternary surfactant system.**

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Description

This invention relates to concentrated homogeneous liquid detergent compositions containing a well-defined surface-active mixture. In more detail, the compositions herein are characterized by the utilization of a ternary surfactant system and contain less than 50% water. The ternary surfactant system contains a majority of an anionic surfactant which is represented by a binary mixture of an alkyl(aryl) sulfonated surface-active agent and an alk(en)yl succinate in a weight ratio of sulfonate to succinate in the range of from 3:1 to 1:4, and a nonionic surfactant component.

The inventive compositions exhibit excellent and highly desirable detergency, they can be manufactured easily and furthermore display excellent stability during prolonged periods of storage.

Homogeneous concentrated heavy duty liquid detergents are well-known in the art and have found commercial application. The like compositions can comprise a ternary active system, namely: synthetic anionic sulfonates or sulfates in combination with nonionic ethoxylates and soaps. Such prior art compositions are difficultly processable, particularly depending upon alkalinity. The prior art concentrated liquid detergents are in that respect vulnerable to phase separation under neutral to mildly alkaline conditions. As a further consequence of the like matrix criticalities, it is fairly difficult to modify the matrix with a view to increase the performance having regard to certain staining/cleaning situations. From a detergency standpoint, it is known that concentrated liquid compositions of the art, while exhibiting superior cleaning in relation to the majority of fibers, can desirably be improved in relation to cellulosic fiber detergency as compared to the performance derivable from the use of oxygen-bleach containing polyphosphate built granular detergents.

The prior art relative to concentrated homogeneous heavy duty liquid detergent compositions is crowded and diverse. As an example U.S. Patent 4.285.841 discloses builder-free concentrated homogeneous liquid compositions containing a combination of anionic synthetic surface-active compounds, nonionic surface-active compounds and fatty acids. The manufacture of the like compositions containing less than 50% water requires the utilization of substantial amounts of solvents and/or compatibilizing agents and even under those circumstances, remain of borderline stability having particularly regard to levels and type of nonionics, fatty acids, particularly saturated species, and optional electrolytes such as low levels of organic builders.

The succinate ingredient is well-known in the detergent art and has been disclosed in combination with all kinds of detergent executions, mostly granular compositions. While, the like succinates have been recommended for utilization in liquid compositions, it is well-known that substantial formulation difficulties will originate from their use in such compositions, particularly in presence of low levels of water and substantial amounts of nonionics.

German Patent 17 68 851 relates to the utilization of specific succinate derivatives as suds boosters. These compositions contain solely anionic surface-active agents and furthermore substantial levels of water in combination with additional hydrotropes.

German Patent 19 56 671 discloses binary liquid preparations containing substantial levels of alk(en)yl succinates in combination with nonionic surface-active agents. German Patent Application 30 13 904 relates to alkaline cleaning agent compositions, solid or liquid, containing a partially neutralized succinic acid derivative which seems to be utilized for its foaming properties.

EP-A-0 017 951 relates to the utilization of alk(en)yl succinic acid salts or monoesters thereof with polyvalent alcohols for hydrotrope perfumes in liquid detergent compositions containing high levels of electrolytes.

EP-A-0 028 850 relates to the utilization of monoalkyl or alkenyl C₇₋₁₂, preferably C₈ and C₉ succinates, as hydrotropes in nonionic-based liquid detergent compositions.

GB-A-2 049 723 discloses the use of partially neutralized alkyl succinates in replacement for conventional surfactants, in liquid detergent compositions.

It is a main object of this invention to formulate a homogeneous concentrated liquid detergent composition having outstanding performance characteristics comparable to what can be obtained from polyphosphate built granular detergent compositions containing oxygen bleach.

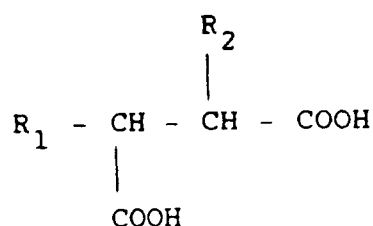
It is a further object of this invention to formulate homogeneous highly concentrated liquid detergent compositions containing substantial levels of a ternary surfactant system based on anionic sulfonates and succinates in combination with nonionic ethoxylates but containing less than 50% of water.

It is a further object of this invention to define highly concentrated storage stable liquid detergent compositions which have excellent laundry cleaning properties under neutral to mildly alkaline pH conditions.

Summary of the Invention

This invention relates to homogeneous concentrated liquid detergent compositions, having less than 50% water, containing a ternary surfactant system. In particular the compositions herein are characterized by the presence of:

- (a) from 35% to 75% by weight of a ternary surfactant system;
- (b) an anionic surfactant component which represents from 50% to 90% by weight of the ternary surfactant system and is represented by a binary mixture of:
 - (1) an alkyl(aryl)sulfonated surface-active agent; and
 - (2) an alk(en)yl succinate having the formula



wherein R_1 is an alk(en)yl radical, having from 10 to 20 C-atoms, and R_2 is hydrogen or C_1 - C_4 alkyl; the weight ratio of sulfonate to succinate being in the range from 3:1 to 1:4; and

(c) a nonionic surfactant component representing from 50% to 10% by weight of the ternary surfactant system;

said composition having a pH, measured in 1% solution at 20 °C, in the range from 7 to 9.

Detailed Description of the Invention

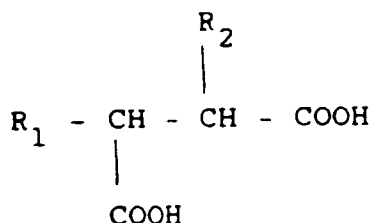
The invention herein can be embodied by highly concentrated homogeneous liquid detergent compositions containing a ternary surfactant system and having a pH in the neutral to mildly alkaline range.

The essential parameters qualifying the invention are described in more detail hereinafter.

Unless stated to the contrary, the "percent-indications" stand for "percent by weight" of the composition.

The anionic surfactant component amounts to from 50% to 90% of the ternary surfactant system and is represented by a binary combination of:

- (1) an alkyl(aryl) sulfonated surface-active agent; and
- (2) an alk(en)yl succinate having the formula



wherein R_1 is an alk(en)yl radical, having from 10 to 20 C-atoms, and R_2 is hydrogen or C_1 - C_4 alkyl; the weight ratio of sulfonate to succinate being in the range from 3:1 to 1:4.

The anionic sulfonate surfactant can be represented by all alkyl(aryl) sulfonated surface-active agents which are known to be suitable for use in liquid detergent compositions and have been used in fact, extensively, in commercial detergent executions.

The like anionic synthetic sulfonates can be represented by the general formula $\text{R}^1\text{SO}_3\text{M}$ wherein R^1 represents a hydrocarbon moiety selected from the group consisting of straight or branched alkyl radicals containing from 8 to 24 carbon atoms and alkyl phenyl radicals containing from 10 to 18 carbon atoms in the alkyl group. M is a salt forming cation which typically is selected from the group consisting of sodium,

potassium, magnesium, ammonium, monoalkanolammonium, dialkanolammonium, trialkanolammonium and mixtures thereof.

A preferred synthetic anionic sulfonate surfactant is a water-soluble salt of an alkylbenzene sulfonic acid containing from 10 to 18 carbon atoms in the alkyl group, the most preferred species for use herein having from C₁₂ to C₁₆ carbon atoms in the alkyl chain.

The alk(en)yl succinate has the formula referred to hereinbefore wherein R₁ is either a saturated or unsaturated radical having from 10 to 20 carbon atoms, preferably an unsaturated derivative having from 12 to 16 carbon atoms in the alkenyl moiety. R₂ can be hydrogen or C₁-C₄ alkyl, although hydrogen is preferred. The terms "succinate" and "succinic acid" are used interchangeably. Suitable succinic acid salts include the sodium, potassium, lithium, ammonium, mono-, di- and tri-alkanol amine salts and mixtures thereof.

Preferred succinic acid derivatives for use herein include 2-dodecenylsuccinic acid, 2-tetradecenylsuccinic acid, 2-hexadecenylsuccinic acid, decyl succinic acid, dodecyl succinic acid and tetradecyl succinic acid and the water-soluble salts thereof. The alkyl or alkenyl chain attached to succinic acid can be either straight or branched. Preferred are the straight-chain alk(en)yl moieties.

The weight ratio of sulfonate to succinate surfactant in the binary mixture is in the range from 3:1 to 1:4, preferably from 2:1 to 1:2.

The ternary surfactant system represents usually from 35% to 75% of the composition. The anionic surfactant component is defined in the salt form.

The nonionic surfactant component contains a hydrophobic organic radical condensed with an ethylene oxide hydrophilic moiety. All ethoxylated nonionic surfactants which are known to be suitable for use in detergent application can be used in the compositions of this invention. Preferred nonionic species herein are polyethoxylates derived from primary and secondary aliphatic alcohols having from 8 to 24 carbon atoms, and having a HLB (hydrophilic-lipophilic balance) in the range from 8 to 15. These preferred ethoxylates frequently contain from 2 to about 14 moles of ethylene oxide per mole of hydrophobic moiety. The hydrocarbyl chain (hydrophobic moiety) can be represented by linear or branched fatty alcohols.

A preferred class of nonionic ethoxylates is represented by the condensation product of a fatty alcohol having from 12 to 15 carbon atoms and from 4 to 10 moles of ethylene oxide per mole of fatty alcohol. Suitable species of this class of ethoxylates include: the condensation product of C₁₂-C₁₅ oxo-alcohols and 7 moles of ethylene oxide per mole of alcohol; the condensation product of C₁₃-C₁₅ oxoalcohols and 5 moles of ethylene oxide; the condensation product of narrow cut C₁₄-C₁₅ oxo-alcohols and 7 or 9 moles of ethylene oxide per mole of fatty (oxo)alcohol; the condensation product of a narrow cut C₁₂-C₁₃ fatty (oxo)-alcohol and 6.5 moles of ethylene oxide per mole of fatty alcohol; and the condensation products of a C₁₀-C₁₄ coconut fatty alcohol with a degree of ethoxylation (moles EO/mole fatty alcohol) in the range from 5 to 8. The fatty oxo alcohols while mainly linear can have, depending upon the processing conditions and raw material olefins, a certain degree of branching, particularly short chain such as methyl branching. A degree of branching in the range from 15% to 50% (weight %) is frequently found in commercial oxo-alcohols.

Preferred nonionic ethoxylated components can also be represented by a mixture of 2 separately ethoxylated nonionic surfactants having a different degree of ethoxylation. For example, the nonionic ethoxylate can be represented by mixtures of a first ethoxylated surfactant containing from 3 to 7 moles of ethylene oxide per mole of hydrophobic moiety and a second ethoxylated species having from 8 to 14 moles of ethylene oxide per mole of hydrophobic moiety. A preferred nonionic ethoxylated mixture contains a lower ethoxylate which is the condensation product of a C₁₂-C₁₅ oxo-alcohol, with up to 50% (wt) branching, and from 3 to 7 moles of ethylene oxide per mole of fatty oxo-alcohol, and a higher ethoxylate which is the condensation product of a C₁₆-C₁₉ oxo-alcohol with more than 50% (wt) branching and from 8 to 14 moles of ethylene oxide per mole of branched oxo-alcohol.

The nonionic surfactant component represents from 50% to 10%, preferably from 15% to 40% of the ternary surfactant system.

The compositions herein contain less than 50%, usually from 15% to 40% water.

The claimed compositions are further characterized by a pH, measured in 1% aqueous solution at 20 °C, in the range from 7 to 9. This pH range implies that the anionic surfactant component, i.e., the binary mixture of sulfonate and succinate, particularly the succinate, is substantially completely (i.e., more than 90%) neutralized in the claimed composition as is.

In addition to the essential ingredients described hereinbefore, the compositions herein frequently contain a series of optional ingredients which are used for their known functionality in conventional quantities.

Examples of the like optional ingredients can include fatty acids, saturated and/or unsaturated, and the corresponding soaps, synthetic anionic surfactants which are different from sulfonates (non-sulfonate

anionics), water-insoluble solvents, enzymes, enzyme stabilizers, polyacids, suds regulants, brighteners, perfumes, dyes, antioxidants, bactericides, corrosion inhibitors, fabric-softening agents, phase regulants and the like.

Suitable fatty acids, saturated or unsaturated, have from 10 to 18 carbon atoms in the alkyl chain. Preferred are unsaturated species having from 14 to 18 carbon atoms in the alkyl chain, most preferably oleic acid. The corresponding soaps can equally be used. The optional fatty acid/soaps are used in levels up to 10%, preferably from 1% to 8%, (of the composition). The fatty acids/soaps, among others, act as suds modifiers/regulants.

Synthetic non-sulfonate anionics can also be used in the composition in relatively minor levels, e.g. in levels not exceeding 25% of the ternary surfactant system. Examples of suitable non-sulfonate anionics include the salts of sulfated fatty alcohols having from 12 to 20 carbon atoms in the alcohol chain.

Water-insoluble solvents such as terpenes, phthalic acid esters and liquid paraffins can also be used in levels generally below 5%.

Detergent enzymes generally aid and augment the removal of specific stains. Suitable enzymes can be represented by proteases, amylases, lipases, glucose-oxidases, cellulase, or mixtures thereof. Proteases and amylases are preferred in the claimed liquid concentrated compositions. They are frequently employed in a level from about 0.01% to about 1%.

All generally known enzyme stabilizing systems can be used in the compositions herein in the art established level. Examples of suitable stabilizing systems include short C₁₋₄ chain carboxylic acid, particularly formic acid in combination with low level of calcium, boric acid and the water-soluble salts thereof possibly in combination with polyols.

Another preferred optional ingredient is represented by a polyacid or mixture of polyacids in an amount from 0.05% to 2%. Suitable polyacids are those having one pK value of at least 5. Preferred polyacid species for use herein can be represented by organo-phosphonic acids, particularly alkylene-polyamino-polyalkylene phosphonic acids such as ethylene diamine tetramethylenephosphonic acid, and diethylene triaminepentamethylenephosphonic acid or the salts thereof. Suitable polyamino-polyalkylene ethoxylate polymers are disclosed in European Patent Application number 0 112 593.

Non-fatty acid detergent suds regulants can also be used. Preferred species include alkylated polysiloxanes such as dimethylpolysiloxane also frequently termed silicone. The silicones are frequently used in a level not exceeding 0.5%, most preferably between 0.01% to 0.2%.

The compositions herein can also contain known antioxidants for their known utility, frequently radical scavengers, in the art established levels i.e. 0.01% to 0.25% (by reference to total composition). These antioxidants are frequently introduced in conjunction with unsaturated organic acids. While many suitable antioxidants are readily known and available for that purpose, especially preferred for use in the compositions herein are: 2,6 ditertiary butyl-p-cresol, more commonly known as butylated hydroxytoluene, BHT, and 2-tertiarybutyl-4-hydroxyanisole. Other suitable antioxidants are: 4,4'-thiobis(6-ter-butyl-m-cresol) and 2-methyl-4,6-dinonyl phenol.

Soil release polymers can also be incorporated in the compositions herein. Suitable species of such release polymers are described in U.S. Patent Application Serial Number 684.511, filed December 21, 1984. However compositions comprising at least 0,01% by weight of a soil release polymer which is an alkoxylated ester of phthalic acid are excluded from the present invention.

The phase regulant is a further optional ingredient in the compositions herein. This component together with water can constitute the solvent matrix for the claimed concentrated liquid compositions. Suitable ingredient classes include lower aliphatic alcohols having from 2 to 6 carbon atoms and from 1 to 3 hydroxyl groups, ethers of diethyleneglycol and lower aliphatic monoalcohols having from 1 to 4 carbon atoms. Specific examples of phase regulants are: ethanol; n-propanol; isopropanol; butanol; 1,2-propanediol; 1,3-propanediol; monomethyl-, ethyl-, propyl-, and monobutyl ethers of di-ethylene glycol.

The claimed invention is illustrated and clarified with the aid of the following examples.

50 EXAMPLE I

A liquid detergent composition in accordance with the invention is prepared by mixing the listed ingredients in the stated proportions.

	<u>Ingredients</u>	<u>% by weight</u>
	Dodecylbenzene sulfonate acid	10.-
5	C ₁₀ -C ₁₅ -oxoalcohol condensed with 7 moles of ethylene oxide per mole of fatty alcohol	11.5
	2-Dodecenyl-succinic acid	15.-
10	C ₁₂ -C ₁₄ alcohol sulfate-triethanol- amine salt	4.-
	Oleic acid	4.-
15	Triethanolamine }	5.-
	} neutralizing agents	
	Sodium hydroxide } to yield pH 7.6	6.-
20	Ethanol	7.-
	Water	32.-
	Miscellaneous-Minors	balance to 100

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The preceding composition is, from a detergency performance standpoint, compared to ARIEL,^R a granular tripolyphosphate built detergent containing oxygen bleach. The tests are carried out in a horizontal drum washing machine in an up-to-60°C cycle. Comparative performances are measured on cotton strips, stained with various types of artificial soils inclusive of bleach-builder sensitive soils, enzyme-sensitive soils, particulate soils and greasy-oily soils. It is found that the composition in accordance with this invention provides textile cleaning performance on all types of soils comparable to what is obtained from ARIEL.

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It was also found that the liquid composition of Example I remained homogeneous and stable after at least 2 weeks storage at temperatures varying from 4°C to 50°C and also following exposure to several freeze-thaw cycles.

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The following examples illustrate additional executions of this invention. The abbreviations for the individual ingredients of the examples have the following meaning:

	C ₁₂ HLAS	linear dodecyl benzene sulfonic acid
	C ₁₆ HLAS	linear hexadecyl benzene sulfonic acid
40	C ₂₀ AS	sodium salt of eicosene α sulfonate
	TEA CnAS	triethanolamine coconut(C ₁₂₋₁₄) alcohol sulfate
	C _{x-y} EO _n	C _{x-y} alcohol ethoxylated with n moles of ethylene oxide
	C _{x-y} EO _n S	sodium salt of sulfated C _{x-y} EO _n
	DSA	2-dodecenyl succinic acid
45	HDSA	dodecyl succinic acid
	TSA	2-tetradecenyl succinic acid
	C ₁₂₋₁₄ FA	coconut fatty acid
	DETPMP	diethylene triamino pentamethyl phosphonic acid
50	TEA	triethanolamine

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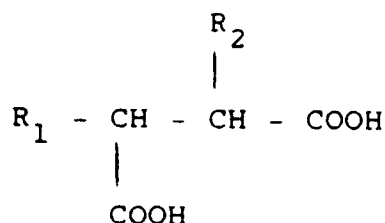
		EXAMPLES									
		[II]	[III]	[IV]	[V]	[VI]	[VII]	[VIII]	[IX]	[X]	[XI]
		in % by weight									
5	C ₁₂ HLAS	15	-	11	10	6	8	11	-	14	8
	C ₁₆ HLAS		12.5								
10	C ₂₀ ES								12		
	C ₁₆₋₁₈ EO ₁₁			7							
15	C ₁₃₋₁₅ EO ₇		11.5		6	15	12	12	12	10	
	C ₁₃₋₁₅ EO ₅										14
	C ₁₃₋₁₅ EO ₄	7		7	6						
20	C ₁₆₋₁₈ EO _{2S}						5				
	DSA	15	15			15	15	10	15	8	15
	HDSA			7							
25	TSA				17						
	TEA CnAS		3			3					4
30	C ₁₂₋₁₄ FA							5		5	
	Oleic acid		4	4		8		3		3	4
	Citric acid	1.0	1.0	0.2	1.0	0.2	1.0	0.2	1.0	1.0	0.5
35	DETPMP	0.9	0.6	0.9	0.6	0.9	0.6	0.9	0.9	0.9	0.8
	Ethanol	8	5	8	10	6	6	8	5	10	8
40	TEA	5	5	6	5	4	4	4	5	5	8
	NaOH	to neutralize acid components up to pH 7.5 to 7.8 as is									
45	Water	38	32	39	35	32	31	35	39	33	30
	Miscellaneous incl. brightener, enzyme, aesthetic			u p	t o	1 0 0					
50	pH(1% sol.)	7.9	7.9	7.5	8.0	7.9	7.9	7.7	7.9	7.5	7.7

Claims

1. Homogeneous concentrated aqueous liquid detergent composition containing less than 50% by weight water, a ternary anionic-nonionic surfactant system, and if desired, conventional additives, characterized in that,

(a) the ternary surfactant system represents from 35% to 75% by weight (of the composition);
 (b) the anionic surfactant component amounts to 50% to 90% by weight of the ternary surfactant system and is represented by a binary mixture of:

- (1) an alkyl(aryl)sulfonated surface-active agent; and
 (2) an alk(en)yl succinate having the formula



wherein R₁ is an alk(en)yl radical, having from 10 to 20 C-atoms, and R₂ is hydrogen or C₁-C₄ alkyl; the weight ratio of sulfonate to succinate being in the range from 3:1 to 1:4; and

(c) the nonionic surfactant component represents from 50% to 10% by weight of the ternary surfactant system;

said composition having a pH, measured in 1% solution at 20 °C, in the range from 7 to 9 excluding at least 0.01% by weight of a soil release polymer which is an alkoxylated ester of phthalic acid.

2. The composition in accordance with Claim 1 wherein the alkyl(aryl)sulfonate is an alkylbenzene sulfonate salt having from 10 to 18 carbon atoms in the alkylgroup, the salt forming cation being, sodium, potassium, magnesium, ammonium, monoalkanolammonium, dialkanolammonium, trialkanolammonium and mixtures thereof.

3. The composition in accordance with Claim 1 wherein the alk(en)yl succinate is selected from the group of 2-dodecenylsuccinic acid, 2-tetradecenylsuccinic acid, 2-hexadecenylsuccinic acid, decyl succinic acid, dodecyl succinic acid and tetradecyl succinic acid and the water-soluble salts thereof.

4. The composition in accordance with Claim 3 wherein the alk(en)yl group is a straightchain moiety and wherein the weight ratio of the sulfonate surfactant to the succinate surfactant is in the range from 2:1 to 1:2.

5. The composition in accordance with Claim 3 wherein the nonionic surfactant component represents from 15% to 40% by weight of the ternary surfactant system.

6. The composition in accordance with Claim 1 which contains from 15% to 40% by weight of water.

7. The composition in accordance with Claim 1 which, in addition, contains from 1% to 8% by weight of a C₁₀-C₁₈ fatty acid.

8. The composition in accordance with Claim 7 which in addition contains from 0.01% to 0.25% by weight of an antioxidant.

9. The composition in accordance with Claim 8 wherein the fatty acid is oleic acid.

Patentansprüche

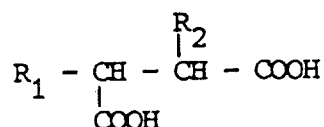
1. Homogene, konzentrierte, wäßrige, flüssige Detergenezusammensetzung, welche weniger als 50 Gew.-% Wasser, ein ternäres anionisches/nichtionisches grenzflächenaktives System und, wenn gewünscht, herkömmliche Zusatzstoffe enthält, dadurch gekennzeichnet, daß

(a) das ternäre grenzflächenaktive System 35 Gew.-% bis 75 Gew.-% (der Zusammensetzung) darstellt;

(b) die anionische grenzflächenaktive Komponente 50 Gew.-% bis 90 Gew.-% des ternären grenzflächenaktiven Systems bildet und durch ein binäres Gemisch repräsentiert wird, welches aus:

- (1) einem alkyl(aryl)sulfonylierten grenzflächenaktiven Mittel; und
(2) einem Alk(en)ylsuccinat mit der Formel

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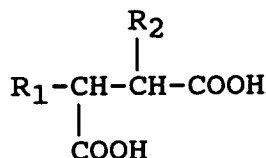


- besteht, worin R₁ ein Alk(en)ylrest mit 10 bis 20 Kohlenstoffatomen ist und R₂ für Wasserstoff oder C₁-C₄-Alkyl steht; worin das Gewichtsverhältnis von Sulfonat zu Succinat im Bereich von 3:1 bis 1:4 beträgt; und
(c) die nichtionische grenzflächenaktive Komponente 50 Gew.-% bis 10 Gew.-% des ternären grenzflächenaktiven Systems bildet;
welche Zusammensetzung einen pH-Wert, gemessen in 1%iger Lösung bei 20 °C, im Bereich von 7 bis 9 aufweist, mit Ausnahme von wenigstens 0,01 Gew.-% eines Schmutzfreisetzung-Polymers, welches ein alkoxylierter Ester von Phthalsäure ist.
2. Zusammensetzung nach Anspruch 1, worin das Alkyl(aryl)sulfonat ein Alkylbenzolsulfonatsalz mit 10 bis 18 Kohlenstoffatomen in der Alkylgruppe ist, wobei das salzbildende Kation Natrium, Kalium, Magnesium, Ammonium, Monoalkanolammonium, Dialkanolammonium, Trialkanolammonium oder ein Gemisch hiervon ist.
3. Zusammensetzung nach Anspruch 1, worin das Alk(en)ylsuccinat von der Gruppe bestehend aus 2-Dodecenylnbernsteinsäure, 2-Tetradecenylnbernsteinsäure, 2-Hexadecenylnbernsteinsäure, Decylnbernsteinsäure, Dodecylbernsteinsäure und Tetradecylbernsteinsäure und den wasserlöslichen Salzen hiervon ausgewählt ist.
4. Zusammensetzung nach Anspruch 3, worin die Alk(en)ylgruppe geradkettig ist und worin das Gewichtsverhältnis von Sulfonat-grenzflächenaktivem Mittel zum Succinat-grenzflächenaktiven Mittel im Bereich von 2:1 bis 1:2 beträgt.
5. Zusammensetzung nach Anspruch 3, worin die nichtionische grenzflächenaktive Komponente 15 Gew.-% bis 40 Gew.-% des ternären grenzflächenaktiven Systems darstellt.
6. Zusammensetzung nach Anspruch 1, welche 15 Gew.-% bis 40 Gew.-% Wasser enthält.
7. Zusammensetzung nach Anspruch 1, welche zusätzlich 1 Gew.-% bis 8 Gew.-% einer C₁₀-C₁₈-Fettsäure enthält.
8. Zusammensetzung nach Anspruch 7, welche zusätzlich von 0,01 Gew.-% bis 0,25 Gew.-% von einem Antioxydans enthält.
9. Zusammensetzung nach Anspruch 8, worin die Fettsäure Ölsäure ist.

Revendications

1. Composition détergente aqueuse homogène, concentrée et liquide, contenant moins de 50 % en poids d'eau, un système tensio-actif ternaire anionique/non ionique, et, si on le désire, des additifs traditionnels, caractérisée en ce que :
- (a) le système de tensio-actif ternaire représente de 35 % à 75 % en poids (de la composition) ;
(b) le composant tensio-actif anionique représente de 50 % à 90 % en poids du système tensio-actif ternaire et il est représenté par un mélange binaire de :
- (1) un agent tensio-actif alkyl(aryl)sulfonaté ; et

(2) un alkyl-ou alcénylsuccinate de formule :



dans laquelle R₁ est un radical alkyle ou alcényle, ayant de 10 à 20 atomes de carbone, et R₂ représente un atome d'hydrogène ou un groupe alkyle en C₁ à C₄ ; le rapport pondéral entre le sulfonate et le succinate se situant dans la gamme de 3:1 à 1:4 ; et

(c) le composant tensio-actif non ionique représente de 50 % à 10 % en poids du système tensio-actif ternaire ; ladite composition ayant un pH, mesuré dans le cas d'une solution à 1 % à 20 °C, de 7 à 9 à l'exclusion d'au moins 0,01 % en poids d'un polymère à rôle d'enlèvement des salissures qui est un ester alcoylé d'acide phtalique.

2. Composition selon la revendication 1, dans laquelle l'alkyl (aryl) sulfonate est un sel (d'acide) alkylbenzènesulfonique ayant de 10 à 18 atomes de carbone dans le groupe alkyle, le cation formateur du sel étant un cation sodium, potassium, magnésium, ammonium, monoalcanolammonium, dialcanolammonium, trialcanolammonium, ou un de leurs mélanges.

3. Composition selon la revendication 1, dans laquelle l'alkyl- ou alcényl succinate est choisi dans le groupe formé par l'acide 2-dodécénylsuccinique, l'acide 2-tétradécénylsuccinique, l'acide 2-hexadécénylsuccinique, l'acide décyl succinique, l'acide dodécyl succinique et l'acide tétradécyl succinique, et leurs sels hydrosolubles.

4. Composition selon la revendication 3, dans laquelle le groupe alkyle ou alcényle est un fragment linéaire et dans laquelle le rapport pondéral entre le sulfonate tensio-actif et le succinate tensio-actif se situe dans la gamme de 2:1 à 1:2.

5. Composition selon la revendication 3, dans laquelle le composant tensio-actif non ionique représente de 15 % à 40 % en poids du système tensio-actif ternaire.

6. Composition selon la revendication 1, qui contient de 15 % à 40 % en poids d'eau.

7. Composition selon la revendication 1, qui, en outre, contient de 1 % à 8 % en poids d'un acide gras en C₁₀-C₁₈.

8. Composition selon la revendication 7, qui contient, en outre, de 0,01% à 0,25 % en poids d'un antioxydant.

9. Composition selon la revendication 8, dans laquelle l'acide gras est l'acide oléique.