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(54) **Cleaning compositions with combined highly hydrophilic and highly hydrophobic nonionic surfactants**

Reinigungsmittelzusammensetzungen mit einer Kombination aus stark hydrophilen und stark hydrophoben nichtionischen Tensiden

Compositions de nettoyage avec des agents tensio-actifs non-ioniques hautement hydrophiles et hautement hydrophobes combinés

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**EP-A- 0 265 041 EP-A- 0 316 726  
EP-A- 0 379 256 EP-A- 0 475 002  
EP-A- 0 497 337 EP-A- 0 503 219  
WO-A-89/11525 WO-A-91/03540  
FR-A- 2 013 197 FR-A- 2 062 732  
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## Description

### Technical field

**[0001]** The present invention relates to cleaning compositions. Although the present invention applies primarily to hard surface cleaning compositions, it may also be of interest for other cleaning compositions including dishwashing and laundry detergent compositions.

### Background

**[0002]** Compositions which can be used in diluted form are known in the art. In such compositions, the technical problem lies in sustaining upon dilution an efficient cleaning performance. Such compositions for dilute cleaning are described for instance in the European Patent EP-A- 0 503 219. In these compositions, the dilute cleaning performance is obtained by using alkanolamines. This '219 patent application also mentions the use of nonionic surfactants among which ethoxylated fatty alcohols are listed.

**[0003]** Hard surface cleaning compositions comprising various surfactants, including highly ethoxylated nonionic surfactants, which can be used in diluted form are also known in the art. Representative of this prior art are the compositions described in European Patent Application EP-A-561103.

**[0004]** There is a constant strive for the development of cleaning compositions with better performance in several respects. Better cleaning on all soils, including greasy soils and soap scum is of course a principal object, both for neat and diluted compositions which are often used in the cleaning of for instance hard surfaces. Such greasy soils are commonly brought by cooking with oils and fatty foods, and by simple contact with human skin, thus they are present on most surfaces, particularly in bathrooms and kitchens.

**[0005]** It is thus an object of the present invention to provide cleaning compositions which can be effectively used in diluted form, on various surfaces as well as in laundry applications, to clean various soils and stains. More specifically, it is a further object of the present invention to provide satisfactory shine performance and surface safety when used as hard surface cleaners.

**[0006]** It has now been found that this object can be efficiently met by formulating cleaning compositions comprising a specific nonionic surfactant system. Indeed, it has been found that cleaning compositions comprising at least a first nonionic surfactant with an HLB of at least 14 (hydrophilic-lipophilic balance) and at least a second nonionic surfactant with an HLB below 9 exhibit a great flexibility in the soils it may clean. These compositions unexpectedly exhibit outstanding cleaning performance upon dilution, compared to compositions comprising typical nonionic surfactants while the cleaning performance of the neat, i.e. undiluted compositions is similar, regardless of the presence of said no-

nic surfactant system.

**[0007]** In other words, it has now been found that the cleaning compositions comprising a nonionic surfactant system of at least a first surfactant with an HLB of at least 14 and at least a second surfactant with an HLB below 9 exhibit outstanding cleaning performance when used both neat and diluted.

**[0008]** Specifically, the compositions according to the present invention are especially effective on greasy soils, both when used in hard water and also when used in soft water. Indeed, a particular advantage of the present invention is robustness to different usage conditions, e.g. variations in water hardness used for diluting the product.

**[0009]** This invention is also particularly useful as it allows to formulate compositions with reduced levels of other ingredients, yet retaining optimal cleaning performance, due to said combination of at least a first nonionic surfactant with an HLB of at least 14 and at least a second nonionic surfactant with an HLB below 9 ; also, the user needs less product to achieve the same task. This advantage is particularly valuable in terms of environmental compatibility.

**[0010]** Representative of the prior art are the following documents:

**[0011]** FR-A-2 013 197 discloses laundry spotter compositions comprising a mixture of two different alcohol ethoxylated/propoxylated nonionic surfactants, i.e. one alcohol ethoxylated nonionic surfactant with 3 to 12 ethoxy groups and one alcohol ethoxylated nonionic surfactant with 1 to 8 ethoxy groups. However, FR 2013 197 fails to disclose the presence of an ionic surfactants. Also FR 2 013 197 nowhere discloses a method of cleaning a hard surface wherein an aqueous composition according to the present invention, is diluted in water and subsequently applied to said hard surface

**[0012]** GB-A-2 011 944 discloses a stable low foaming unbuild aqueous liquid composition with 25% to 45% by weight of a ternary non-ionic detergent mixture wherein the nonionic surfactants are high-, medium-, and low-ethoxylated primary saturated fatty alcohols with specific alcohol chains. No anionic surfactants are disclosed. Also GB-A-2 011 944 nowhere discloses a method of cleaning a hard surface wherein an aqueous composition according to the present invention, is diluted in water and subsequently applied to said hard surface.

**[0013]** EP-A-0 497 337 discloses suspensions of peracids with a surfactant system comprising C8-C22 alcohol ethoxylates EO 6-25 and C8-C22 alcohol ethoxylates EO 1-5. No anionic surfactants are disclosed. Also EP-A-0 497 337 nowhere discloses a method of cleaning a hard surface wherein a composition according to the present invention, is diluted in water and subsequently applied to said hard surface.

**[0014]** EP-A- 475 002 discloses a thickened acidic aqueous composition comprising an acid, a C10-C18 fatty alcohol ethoxylate (8-14 ethylene oxide) and a

thickener comprising an ethoxylate of a C10-C18 fatty alcohol with 1-7 ethylene oxide and less than 5% of free fatty alcohol. No anionic surfactants are disclosed. Also EP-A-475 002 nowhere discloses a method of cleaning a hard surface wherein a composition according to the present invention, is diluted in water and subsequently applied to said hard surface.

**[0015]** EP-A- 379 256 discloses stable acidic all-purpose liquid cleaning compositions comprising from 0.5% to 4% by weight of a stable nonionic surfactant mixture, an organic acid and an acid stable anti-microbial compound. Said stable nonionic surfactant system consists essentially of a water soluble nonionic surfactant and a water dispersible nonionic surfactant in a weight ratio of water soluble to water dispersible nonionic of from 4:1 to 4:3. No anionic surfactants are mentioned. Also EP-A- 379 256 nowhere discloses a method of cleaning a hard surface wherein a composition according to the present invention, is diluted in water and subsequently applied to said hard surface.

**[0016]** WO-A-91/03540 discloses particular mixtures of alkali-resistant polyalkylene glycol ethers with a foam suppressing action. No anionic surfactants are mentioned. Also WO-A-91/03540 nowhere discloses a method of cleaning a hard surface wherein a composition according to the present invention, is diluted in water and subsequently applied to said hard surface.

#### Summary of the invention

**[0017]** The present invention encompasses an aqueous cleaning composition comprising from 2% to 6% by weight of the total composition of an anionic surfactant and from 4% to 30% by weight of the total composition of a nonionic surfactant system, whereby said non-ionic surfactant system comprises:

- at least 2% by weight of the total composition of a first surfactant with an HLB of at least 14;
- at least 2% by weight of the total composition of a second surfactant with an HLB below 9

wherein the weight ratio of said highly hydrophilic nonionic surfactant to said highly hydrophobic nonionic surfactant is from 0.1:1 to 1:0.1, preferably 0.2:1 to 1:0.2.

**[0018]** The present invention encompasses both neat compositions as described hereinabove and diluted compositions. Diluted compositions are obtained by diluting in water the above neat compositions comprising an anionic surfactant and from 4 % to 30 % by weight of the total composition of a nonionic surfactant system. Said diluted compositions comprise from 0.001 % to 5 % by weight of the total composition of said nonionic surfactant system.

**[0019]** The present invention also encompasses a method of cleaning hard surfaces wherein a composition comprising an anionic surfactant and a nonionic surfactant system, whereby said nonionic surfactant sys-

tem comprises at least 2% by weight of the total composition of a first surfactant with an HLB of at least 14 and at least 2 % by weight of the total composition of a second surfactant with an HLB below 9, is diluted in water and subsequently applied to said hard surface.

#### Detailed description of the invention

**[0020]** The compositions according to the invention comprise, as an essential ingredient, a nonionic surfactant system comprising at least a nonionic surfactant with an HLB of at least 14, hereinafter referred to as highly hydrophilic surfactant and at least a nonionic surfactant with an HLB below 9, hereinafter referred to as highly hydrophobic surfactant.

**[0021]** Suitable nonionic surfactants for the implementation of said surfactant system are alkoxyated alcohols or alkoxyated phenylalcohols which are commercially available with a variety of alcohol chain lengths and a variety of alkoxylation degrees. By simply varying the length of the chain of the alcohol and/or the degree of alkoxylation, alkoxyated alcohols or alkoxyated phenylalcohols can be obtained with different HLB values. It is to be understood to those ordinarily skilled in the art that the HLB value of any specific compound is available from the literature.

**[0022]** Suitable chemical processes for preparing the highly hydrophilic and highly hydrophobic nonionic surfactants for use herein include condensation of corresponding alcohols with alkylene oxide, in the desired proportions. Such processes are well known to the man skilled in the art and have been extensively described in the art. As an alternative, a great variety of alkoxyated alcohols suitable for use herein is commercially available from various suppliers.

**[0023]** The highly hydrophilic nonionic surfactants for use in the present invention have an HLB of at least 14 and most preferably above 15. Those highly hydrophilic nonionic surfactants have been found to be particularly efficient for a rapid wetting of typical hard surfaces covered with greasy soils and to provide effective soil suspension.

**[0024]** The highly hydrophobic nonionic surfactants for use in the present invention have an HLB below 9 and most preferably below 8.5. Those highly hydrophobic nonionic surfactants have been found to provide excellent grease cutting and emulsification properties.

**[0025]** Preferred highly hydrophilic nonionic surfactants to be used in the compositions according to the present invention are surfactants having an HLB from 14 to 20 and being according to the formula  $RO-(C_2H_4O)_n(C_3H_6O)_mH$ , wherein R is a  $C_8$  to  $C_{22}$  alkyl chain or a  $C_8$  to  $C_{28}$  alkyl benzene chain, and wherein  $n+m$  is from 6 to 100 and  $n$  is from 0 to 100 and  $m$  is from 0 to 100, preferably  $n+m$  is from 21 to 50 and,  $n$  and  $m$  are from 0 to 50, and more preferably  $n+m$  is from 21 to 35 and,  $n$  and  $m$  are from 0 to 35. Throughout this description  $n$  and  $m$  refer to the average degree of the

ethoxylation/ propoxylation. The preferred R chains for use herein are the C<sub>8</sub> to C<sub>22</sub> alkyl chains. Examples of highly hydrophilic nonionic surfactants for use herein are LUTENSOL<sup>®</sup> AO30 (HLB=17; R is a mixture of C<sub>13</sub> and C<sub>15</sub> alkyl chains, n is 30 and m is 0) commercially available from BASF, CETALOX<sup>®</sup> 50 (HLB= 18 ; R is a mixture of C<sub>16</sub> and C<sub>18</sub> alkyl chains, n is 50 and m is 0) commercially available from WITCO, and MARLIPAL<sup>®</sup> 013/400 (HLB= 18; R is a mixture of C<sub>12</sub> and C<sub>14</sub>, n is 40 and m is 0) commercially available from HULS.

**[0026]** Preferred highly hydrophobic nonionic surfactants to be used in the compositions according to the present invention are surfactants having an HLB of from 2 to 9 and being according to the formula RO-(C<sub>2</sub>H<sub>4</sub>O)<sub>n</sub>(C<sub>3</sub>H<sub>6</sub>O)<sub>m</sub>H, wherein R is a C<sub>8</sub> to C<sub>22</sub> alkyl chain or a C<sub>8</sub> to C<sub>28</sub> alkyl benzene chain, and wherein n+m is from 0.5 to 5 and n is from 0 to 5 and m is from 0 to 5, preferably n+m is from 0.5 to 4 and, n and m are from 0 to 4, more preferably n+m is from 1 to 4 and, n and m are from 0 to 4. The preferred R chains for use herein are the C<sub>8</sub> to C<sub>22</sub> alkyl chains. Examples of highly hydrophobic nonionic surfactants for use herein are DOBANOL<sup>®</sup> 91-2.5 (HLB= 8.1; R is a mixture of C<sub>9</sub> and C<sub>11</sub> alkyl chains, n is 2.5 and m is 0) commercially available from SHELL, LUTENSOL<sup>®</sup> AO3 (HLB=B; R is a mixture of C<sub>13</sub> and C<sub>15</sub> alkyl chains, n is 3 and m is 0) commercially available from BASF; Neodol 23-3 (HLB=7.9; R is a mixture of C<sub>12</sub> and C<sub>13</sub> alkyl chains, n is 3 and m is 0) and TERGITOL<sup>®</sup> 25L3 (HLB= 7.7; R is in the range of C<sub>12</sub> to C<sub>15</sub> alkyl chain length, n is 3 and m is 0) commercially available from UNION CARBIDE.

**[0027]** It is possible to use for each category of nonionic surfactants (highly hydrophilic or highly hydrophobic) either one of the nonionic surfactant belonging to said category or mixtures thereof.

**[0028]** The aqueous cleaning compositions according to the present invention comprise anionic surfactant and from 4% to 30% by weight of the total composition of said nonionic surfactant system, preferably from 4% to 25 %, more preferably from 4 % to 20 %.

**[0029]** The compositions according to the present invention comprise said highly hydrophilic nonionic surfactant in an amount of at least 2%, and said highly hydrophobic nonionic surfactant in an amount of at least 2 %.

**[0030]** In the compositions according to the present invention, said highly hydrophilic and highly hydrophobic nonionic surfactants are used in a weight ratio from one to another of from 0.1:1 to 1:0.1, preferably of from 0.2:1 to 1:0.2.

**[0031]** The present invention further encompasses diluted compositions which are obtainable by diluting the compositions described hereinabove, and said diluted compositions comprise anionic surfactant and from 0.001 % to 5 % by weight of the total composition of the nonionic surfactant mixture described hereinabove, preferably from 0.01 % to 0.5 %.

**[0032]** The compositions according to the present in-

vention further comprise an anionic surfactant. The prior art extensively describes anionic surfactants, including alkyl benzene sulfates and sulfonates, alkyl ether sulfates, paraffin sulfonates, sulfonates of fatty acids and of fatty acid esters, sulpho succinates, sarcosinates, all of which are suitable for use herein. Said anionic surfactants can also be used in the form of their salts, including sodium, potassium, magnesium, ammonium and alkanol/alkyl ammonium salts. The preferred anionic surfactants for use herein are paraffin sulfonates or alkyl sulfates, preferably in the form of their sodium or ammonium salt. The aqueous cleaning compositions according to the present invention comprise from 2% to 6% of said anionic surfactants.

**[0033]** The cleaning compositions according to the present invention may further comprise additional surfactants, including other nonionic surfactants, amphoteric and zwitterionic surfactants and mixtures thereof. Typical of these are amine oxides, betaines, sulphobetaines and the like, which are well-known in the detergency art.

**[0034]** The compositions according to the present invention may further comprise an alkanolamine, or mixtures thereof, in amounts ranging from 0.1% to 10% by weight of the total neat composition, preferably from 0.5% to 5%, most preferably from 0.8% to 3%. At such levels, the alkanolamine has a buffering effect for alkaline products in the undiluted product, as well as an unexpected boosting effect on the cleaning performance of the diluted compositions. Suitable alkanolamines for use in the compositions according to the present include monoalkanolamines, dialkanolamines, trialkanolamines, alkylalkanolamines, dialkylalkanolamines and alkoxyalkanolamines. Preferred alkanolamines to be used according to the present invention include monoethanolamine, triethanolamine, aminoethylpropanediol, 2-aminomethyl propanol, and ethoxyethanolamine. Particularly preferred are monoethanolamine, triethanolamine and ethoxyethanolamine.

**[0035]** The compositions according to the present invention may further comprise builders. Suitable builders for use herein include nitrilotriacetates (NTA), polycarboxylates, dipicolinates, citrates, water-soluble phosphates such as tri-polyphosphate and sodium ortho- and pyrophosphates, silicates, ethylene diamine tetraacetate (EDTA), aminopolyphosphonates (DEQUEST), ether carboxylate builders such as in EP-A-286 167, phosphates, iminodiacetic acid derivatives such as described in EP-A-317 542, EP-262 112 and EP-A-399 133, and mixtures thereof. Preferred builders/sequents for use herein are selected from tetrapotassium pyrophosphate and citric acid. The aqueous cleaning compositions according to the present invention may comprise up to 15% by weight of the total neat composition of a builder, preferably from 1% to 10%.

**[0036]** The compositions according to the present invention may further comprise solvents. Suitable solvents for use herein include propylene glycol derivatives

such as n-butoxypropanol or n-butoxypropoxypropanol, water-soluble CARBITOL<sup>R</sup> solvents or water-soluble CELLOSOLVE<sup>R</sup> solvents; water-soluble CARBITOL<sup>R</sup> solvents are compounds of the 2-(2-alkoxyethoxy)ethanol class wherein the alkoxy group is derived from ethyl, propyl or butyl; a preferred water-soluble carbitol is 2-(2-butoxyethoxy)ethanol also known as butyl carbitol. Water-soluble CELLOSOLVE<sup>R</sup> solvents are compounds of the 2-alkoxyethoxy ethanol class, with 2-butoxyethoxyethanol being preferred. Other suitable solvents include benzyl alcohol, and diols such as 2-ethyl-1, 3-hexanediol and 2,2,4-trimethyl-1,3-pentanediol and mixtures thereof. Preferred solvents for use herein are n-butoxypropoxypropanol, BUTYL CARBITOL<sup>R</sup> and mixtures thereof. The compositions according to the present invention comprise up to 15% by weight of the total neat composition of a solvent, preferably from 3% to 10%.

**[0037]** The compositions according to the present invention may also comprise minor ingredients to provide aesthetic or additional product performance benefits. Typical minor ingredients include perfumes, dyes, optical brighteners, soil suspending agents, detergent enzymes, gel-control agents, thickeners, freeze-thaw stabilizers, bactericides, preservatives, hydrotopes like sodium cumene sulfonate and the like.

**[0038]** The present invention further encompasses a method for the cleaning of hard surfaces. According to the present invention, an aqueous cleaning composition comprising 2-6% of an anionic surfactant and from 4% to 30% by weight of the total composition of a nonionic surfactant system, whereby said nonionic surfactant system comprises at least 2% by weight of the total composition of a first surfactant with an HLB of at least 14 and at least 2% by weight of the total composition of a second surfactant with an HLB below 9, is diluted in water so as to obtain from 0.001% to 5% by weight of the total composition of said nonionic surfactant system and subsequently applied to said hard surface.

**[0039]** In the method according to the present invention, said composition is diluted into 10 to 200 times its weight of water, more preferably 50 to 150 times, before it is applied to said hard surface.

**[0040]** The present invention is further illustrated by the following examples.

#### Example I

**[0041]** The following compositions were tested for their cleaning performance when used diluted on greasy soil.

**[0042]** The following compositions were made by mixing the listed ingredients in the listed proportions:

Compositions:	#1	#2
Ingredients:	Weight %	
Sodium paraffin sulfonate	3	3
Alcohol ethoxylate 7EO (1)	4	-
Alcohol ethoxylate 30EO (2)	-	2
Alcohol ethoxylate 3EO (3)	-	2
Sodium Citrate	3	3
Butylcarbitol <sup>R</sup>	4	4
Triethanolamine	1	1
water & minors	up to 100%	

**[0043]** These compositions were evaluated for their grease removal efficiency. A high index is correlated to a high performance.

Dilute cleaning performance (index)		
Compositions	#1	#2
Hard water	100	350
Soft water	100	220

**[0044]** In the examples hereinabove, (1) is an ethoxylate nonionic surfactant representative of the prior art with an HLB of 12. Compounds (2) and (3) are ethoxylate nonionic surfactants according to the present invention. (2) is a highly hydrophilic nonionic surfactant with an HLB of 17, wherein R is a mixture of C13 and C15 alkyl chains and n is 30. (3) is a highly hydrophobic nonionic surfactant with an HLB of 8, wherein R is a mixture of C13 and C15 alkyl chains and alkyl chains and n is 3.

**[0045]** Compositions 1-2 described hereinabove can be used neat or diluted. In the present cleaning performance test these compositions are diluted in 64 times their weight of water and subsequently applied to a hard surface.

**[0046]** Typical dilute grease cleaning results obtained for such compositions are given for the examples hereinabove. Composition #1 which comprises a nonionic surfactant with a moderate HLB (12) gets a cleaning index of 100 and is used as a reference.

**[0047]** According to the present invention, the composition #2 which comprises a nonionic surfactant system comprising alcohol ethoxylate 30EO (an highly hydrophilic nonionic surfactant) and alcohol ethoxylate 3EO (an highly hydrophobic nonionic surfactant) exhibit outstanding cleaning performance upon dilution both in hard and soft water. Indeed, when used with hard water the composition #2 is almost four times more efficient than the composition #1 and when used with soft water the composition #2 is two times more efficient than the composition #1.

**[0048]** The above results surprisingly show that the use of diluted compositions according to the present invention provides a significant benefit in grease cleaning

compared to the composition comprising only nonionic surfactant with a moderate HLB (for example 12), both in hard and soft water.

### Claims

1. An aqueous cleaning composition comprising from 2 % to 6 % by weight of the total composition of an anionic surfactant and from 4 % to 30 % by weight of the total composition of a nonionic surfactant system, said nonionic surfactant system comprising:

- at least 2.0% by weight of the total composition of a first highly hydrophilic surfactant with an HLB of at least 14;
- at least 2.0 % by weight of the total composition of a second highly hydrophobic surfactant with an HLB below 9,

wherein the weight ratio of said highly hydrophilic nonionic surfactant to said highly hydrophobic nonionic surfactant is from 0.1:1 to 1:0.1, preferably from 0.2:1 to 1:0.2.

2. A composition according to claim 1 wherein in said nonionic surfactant system said highly hydrophilic surfactants have an HLB above 15, and said highly hydrophobic surfactants have an HLB below 8.5.

3. A composition according to any of the preceding claims wherein the highly hydrophilic nonionic surfactant is a nonionic of the formula  $RO-(C_2H_4O)_n(C_3H_6O)_mH$  wherein R is a  $C_8$  to  $C_{22}$  alkyl chain or a  $C_8$  to  $C_{28}$  alkyl benzene chain, and wherein  $n+m$  is from 6 to 100 and n and m are from 0 to 100, preferably  $n+m$  is from 21 to 50 and n and m are from 0 to 50, most preferably  $n+m$  is from 21 to 35 and n and m are from 0 to 35.

4. A composition according to any of the preceding claims wherein the highly hydrophobic nonionic surfactant is a nonionic of the formula  $RO-(C_2H_4O)_n(C_3H_6O)_mH$  wherein R is a  $C_8$  to  $C_{22}$  alkyl chain or a  $C_8$  to  $C_{28}$  alkyl benzene chain, and wherein  $n+m$  is from 0.5 to 5 and n and m are from 0 to 5; preferably  $n+m$  is from 0.5 to 4 and n and m are from 0 to 4, and most preferably  $n+m$  is from 1 to 4 and n and m are from 0 to 4.

5. A composition according to any of the preceding claims, wherein said anionic surfactant is a paraffin sulfonate in the form of its sodium salt

6. A method for the cleaning of a hard surface wherein a cleaning composition according to any of the preceding claims is diluted in water and subsequently applied to said hard surface.

7. A method according to claim 6, wherein said composition is diluted into 10 to 200 times its weight of water, more preferably 50 to 150 times, before it is subsequently applied to said hard surface.

8. A diluted hard surface cleaning composition obtainable by diluting in water a composition according to claims 1 to 5, comprising from 0.001 % to 5 %, preferably from 0.01 % to 0.5 % by weight of the total composition of said nonionic surfactants.

### Patentansprüche

1. Wäßrige Reinigungszusammensetzung, umfassend 2 Gew.-% bis 6 Gew.-% der Gesamtzusammensetzung von einem anionischen grenzflächenaktiven Mittel und 4 Gew.-% bis 30 Gew.-% der Gesamtzusammensetzung von einem nichtionischen grenzflächenaktiven System, welches nichtionische grenzflächenaktive System

- mindestens 2,0 Gew.-% der Gesamtzusammensetzung von einem ersten hochhydrophilen grenzflächenaktiven Mittel mit einem HLB-Wert von mindestens 14;

- mindestens 2,0 Gew.-% der Gesamtzusammensetzung von einem zweiten hochhydrophoben grenzflächenaktiven Mittel mit einem HLB-Wert unter 9 umfaßt, worin das Gewichtsverhältnis von dem genannten hochhydrophilen nichtionischen grenzflächenaktiven Mittel zu dem genannten hochhydrophoben nichtionischen grenzflächenaktiven Mittel von 0,1:1 bis 1:0,1 vorzugsweise von 0,2:1 bis 1:0,2 reicht.

2. Zusammensetzung nach Anspruch 1, worin im genannten nichtionischen grenzflächenaktiven System die genannten hochhydrophilen grenzflächenaktiven Mittel einen HLB-Wert über 15 besitzen, und die genannten hochhydrophoben grenzflächenaktiven Mittel einen HLB-Wert unter 8,5 aufweisen.

3. Zusammensetzung nach einem der vorstehenden Ansprüche, worin das hochhydrophile nichtionische grenzflächenaktive Mittel ein nichtionisches Mittel der Formel  $RO-(C_2H_4O)_n(C_3H_6O)_mH$  ist, worin R eine  $C_8$ - $C_{22}$ -Alkylkette oder eine  $C_8$ - $C_{28}$ -Alkylbenzolkette darstellt, und worin  $n + m$  von 6 bis 100 beträgt und n und m von 0 bis 100 betragen, worin vorzugsweise  $n + m$  von 21 bis 50 beträgt und n und m von 0 bis 50 betragen, worin am stärksten bevorzugt  $n + m$  von 21 bis 35 beträgt und n und m von 0 bis 35 betragen.

4. Zusammensetzung nach einem der vorstehenden

Ansprüche, worin das hochhydrophobe nichtionische grenzflächenaktive Mittel ein nichtionisches Mittel der Formel  $RO-(C_2H_4O)_n(C_3H_6O)_mH$  ist, worin R eine  $C_8$ - $C_{22}$ -Alkylkette oder eine  $C_8$ - $C_{28}$ -Alkylbenzolkette darstellt, und worin  $n + m$  von 0,5 bis 5 beträgt und  $n$  und  $m$  von 0 bis 5 betragen, worin vorzugsweise  $n + m$  von 0,5 bis 4 beträgt und  $n$  und  $m$  von 0 bis 4 betragen, und worin am stärksten bevorzugt  $n + m$  von 1 bis 4 beträgt und  $n$  und  $m$  von 0 bis 4 betragen.

5. Zusammensetzung nach einem der vorstehenden Ansprüche, worin das genannte anionische grenzflächenaktive Mittel ein Paraffinsulfonat in Form seines Natriumsalzes ist.
6. Verfahren zur Reinigung einer harten Oberfläche, worin eine Reinigungszusammensetzung nach einem der vorstehenden Ansprüche mit Wasser verdünnt und darauffolgend auf die genannte harte Oberfläche aufgebracht wird.
7. Verfahren nach Anspruch 6, worin die genannte Zusammensetzung mit dem 10 bis 200fachen ihres Gewichtes an Wasser, stärker bevorzugt mit dem 50 bis 150fachen verdünnt wird, bevor sie darauffolgend auf die genannte harte Oberfläche aufgebracht wird.
8. Verdünnte Reinigungszusammensetzung für harte Oberflächen, welche durch Verdünnen einer Zusammensetzung nach den Ansprüchen 1 bis 5 mit Wasser erhältlich ist, welche 0,001 Gew.-% bis 5 Gew.-%, vorzugsweise 0,01 Gew.-% bis 0,5 Gew.-% der Gesamtzusammensetzung von den genannten nichtionischen grenzflächenaktiven Mitteln umfaßt.

## Revendications

1. Composition de nettoyage aqueuse comprenant de 2 % à 6 % en poids de la composition totale d'un tensioactif anionique et de 4 % à 30 % en poids de la composition totale d'un système tensioactif non ionique, ledit système tensioactif non ionique comprenant :
  - au moins 2 %, en poids de la composition totale d'un premier tensioactif hautement hydrophile, ayant une HLB d'au moins 14;
  - au moins 2 %, en poids de la composition totale d'un second tensioactif hautement hydrophobe, ayant une HLB inférieure à 9 **caractérisée en ce que** le rapport pondéral dudit tensioactif non ionique hautement hydrophile audit tensioactif non ionique hautement hydrophobe est de 0,1:1 à 1:0,1, de préférence de 0,2:1 à 1:0,2.
2. Composition selon la revendication 1, **caractérisée en ce que**, dans ledit système tensioactif non ionique, lesdits tensioactifs hautement hydrophiles ont une HLB supérieure à 15, et lesdits tensioactifs hautement hydrophobes ont une HLB inférieure à 8,5.
3. Composition selon l'une quelconque des revendications précédentes, **caractérisée en ce que** le tensioactif non ionique hautement hydrophile est un non ionique de formule  $RO-(C_2H_4O)_n(C_3H_6O)_mH$ , dans laquelle R est une chaîne alkyle en  $C_8$  à  $C_{22}$  ou une chaîne alkylbenzène en  $C_8$  à  $C_{28}$ , et dans laquelle  $n+m$  vaut de 6 à 100 et  $n$  et  $m$  ont une valeur de 0 à 100, de préférence  $n+m$  vaut de 21 à 50 et  $n$  et  $m$  ont une valeur de 0 à 50, et plus particulièrement,  $n+m$  vaut de 21 à 35 et  $n$  et  $m$  ont une valeur de 0 à 35.
4. Composition selon l'une quelconque des revendications précédentes, **caractérisée en ce que** le tensioactif non ionique hautement hydrophobe est un non ionique de formule  $RO-(C_2H_4O)_n(C_3H_6O)_mH$ , dans laquelle R est une chaîne alkyle en  $C_8$  à  $C_{22}$  ou une chaîne alkylbenzène en  $C_8$  à  $C_{28}$ , et dans laquelle  $n+m$  vaut de 0,5 à 5 et  $n$  et  $m$  ont une valeur de 0 à 5, de préférence  $n+m$  vaut de 0,5 à 4 et  $n$  et  $m$  ont une valeur de 0 à 4, et plus particulièrement,  $n+m$  vaut de 1 à 4 et  $n$  et  $m$  ont une valeur de 0 à 4.
5. Composition selon l'une quelconque des revendications précédentes, **caractérisée en ce que** ledit tensioactif anionique est un paraffinesulfonate sous forme de son sel de sodium.
6. Procédé pour le nettoyage d'une surface dure, **caractérisé en ce qu'**une composition de nettoyage selon l'une quelconque des revendications précédentes est diluée dans l'eau et appliquée ensuite sur ladite surface dure.
7. Procédé selon la revendication 6, **caractérisé en ce que** ladite composition est diluée dans 10 à 200 fois son poids d'eau, mieux encore, 50 à 150 fois, avant son application ultérieure sur ladite surface dure.
8. Composition diluée de nettoyage pour surface dure, pouvant être obtenue en diluant dans l'eau une composition selon les revendications 1 à 5, comprenant de 0,001 % à 5 %, de préférence de 0,01 % à 0,5 %, en poids de la composition totale, desdits tensioactifs non ioniques.