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(54) **MEMBRANE FRIENDLY PASTY SOAP COMPOSITION**

MEMBRANFREUNDLICHE PASTENFÖRMIGE SEIFENZUSAMMENSETZUNG

COMPOSITION SAVONNEUSE EN PATE COMPATIBLE AVEC UNE MEMBRANE

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Description

[0001] The present invention refers to a pasty alkaline soap composition which is appropriate for usage in a washing process in which the waste water is purified by a membrane filtration unit, and especially in a membrane filtration unit comprising one or more reverse osmosis steps.

[0002] Paste-like detergents or cleaning agents are known in the art, such as described for example in US 6627592, DE 44 28958, US 6187739, WO 98/33881, WO 98/59025, WO 01/32819 and WO 02/46351.

[0003] The compositions mentioned in WO 98/33881 and WO 01/32819 are intended to provide alkaline paste-like compositions which do without synthetic anionic surfactants of the alkyl benzene sulfonate-type or non-ionic surfactants containing alkoxy groups and synthetic anionic surfactants of the sulfate- and sulfonate-type, respectively, because of their foaming tendency or their poor biodegradability, respectively, while at the same time providing appropriate storage stability and excellent washing performance. However, the compositions described therein lead to problems with respect to purification of the waste water, since they cause a blocking of the filtration unites used to achieve the purification.

[0004] Although WO 98/59025 tends to facilitate the purification process of the waste water accumulated during the washing cycle especially in commercial laundries by providing appropriate detergents large amounts of phosphates are used, which is critical from an environmental point of view. Additionally, it has been found that the combination of products mentioned therein is not appropriate for a waste water purification in which the filtration process comprises one or more reverse osmosis steps. However, especially the purification of the waste water by filtration comprising at least one reverse osmosis step has become very important in recent years since this allows the reuse of the purified water in another washing cycle. This is of great relevance to reduce the costs of the washing process and as well saves fresh water required to be added to the following washing cycles.

[0005] The problem underlying WO 02/46351 is to provide a paste-like detergent or cleaning agent which is appropriate for use in washing processes in which the accumulated waste water is intended to become purified by a filtration process using at least one reverse osmosis step. However, the content of surfactants used therein is very low. Thus, the cleaning performance is reduced or at least the composition is rather appropriate for soil which is easily dispersed predominantly by the alkaline properties of the liquor.

[0006] WO 2004/041990 discloses aqueous paste like compositions comprising an anionic surfactant, a fatty alcohol ethoxylate surfactant, a fatty alcohol and a fatty acid together with builders components.

[0007] Accordingly, the problem underlying the present invention is to provide a detergent or cleaning composition which forms a stable paste, is to a large extent biodegradable, is appropriate to be used in waste water purification processes using a filtration unit which comprises at least one reverse osmosis step, but as well exhibits good cleaning properties.

[0008] Surprisingly, the above object is solved by a paste-like cleaning or detergent composition according to claim 1.

[0009] In the salts of the carboxylic acids corresponding to formula R^1-COOM (I) R^1 may be linear or branched, for example with a methyl residue in 2-position, wherein linear residues are preferred, like they generally occur in fatty acids. Optionally, residue R^1 contains one or more double bonds. R^1 represents a linear or branched alkyl- or alkenyl residue with 8 to 22 carbon atoms and M represents an alkali metal ion. R^1 in formula (I) has 8 to 22 carbon atoms, more preferred 12 to 20 and most preferred 15 to 19 carbon atoms. Such compounds may be exemplified by alkali metal salts of octanoic acid, pelargonic acid, decanoic acid, lauric acid, lauroleic acid, myristic acid, myristoleic acid, palmitic acid, palmitoleic acid, stearic acid, petroselinic acid, petroselaidic acid, oleic acid, linoleic acid, linolaidic acid, linolenis acid, eleostearic acid, arachic acid, gadoleic acid, arachidonic acid, behenic acid, erucic acid, brassidic acid, clupanodonic acid and mixtures thereof. Sodium and potassium as well as mixtures thereof represent preferred alkali metals. When preparing the inventive compositions it is as well possible to use the free carboxylic acids and convert them into to the corresponding alkali metal salt by addition of alkalinity sources or other alkalinic salts, especially alkali hydroxides or alkali carbonates, which are present anyway.

[0010] The composition contains the compound of formula (I) in an amount of from 5 to 25 wt.-%, preferably 8 to 20 wt.-%, based on the whole composition.

[0011] The fatty alcohol alkoxylate and/or an oxo alcohol alkoxylate contains 8 to 22 carbon atoms and an average degree of alkoxylation of at least 5, preferably at least 7. In a preferred embodiment the alkoxylate corresponds to the general formula $R\text{-}(EO)_x\text{-}(PO)_y$ in which R denotes the fatty alcohol and/or oxo alcohol moiety with 8 to 22 carbon atoms, EO represents ethyleneoxide residues and PO represents propyleneoxide residues and x and y denote integers, wherein the sum of x and y is at least 5 and one of x or y may be 0.

[0012] The fatty alcohols appropriate in the present invention can be exemplified by the alcohols obtained from the fatty acids as mentioned above. Oxo alcohols generally represent a mixture of the linear alcohol and the alcohol which is branched with methyl in 2-position. Preferably the alcohol has 12 to 15, more preferred 13 to 14 carbon atoms. Technical mixtures may additionally contain proportions with 11 to 15 carbon atoms.

[0013] In a preferred embodiment in case that y is 0 x is at least 7. Are both x and y unlike 0, preferably x is from 4 to 8 and y is from 2 to 8, especially from 3 to 4.

[0014] The fatty alcohol alkoxylate and/or oxo alcohol alkoxylate is present in an amount of from 1,5 to 8 wt.-%, based on the whole composition.

[0015] The composition according to the invention contains an anionic surfactant in an amount of up to 15 wt.-%, preferably of from 1,5 to 8 wt.-%, which are selected from the compounds comprising C_8-C_{18}-alkyl sulfates, C_8-C_{18}-alkyl ether sulfates, C_8-C_{18}-alkylsulfonates, C_8-C_{18}-α-olefinsulfonates, sulfonated C_8-C_{18}-fatty acids, C_8-C_{18}-alkylbenzenesulfonates, sulfosuccinic mono- and di-C_1-C_{12}-alkyl esters, C_8-C_{18}-alkyl polyglycol ether carboxylates, C_8-C_{18}-N-acyl taurides, C_8-C_{18}-N-sarcosinates, C_8-C_{18}-alkyl isethionates and mixtures thereof.

[0016] Moreover, the composition optionally contains at least one alkyl polyglucoside having from 8 to 14 carbon atoms in the alkyl group and from 1 to 5 glucose moieties. The amount of the alkyl polyglucosid should in the range of from 1 to 6 wt.-%, preferably from 1 to 3 wt.-%

[0017] The alcohols or ethers corresponding to the general formula R^2-OR^3 (II), respectively, contribute to the low-temperature resistance of the inventive composition and additionally may improve its washing performance. The definition of R^1 as mentioned above applies for R^2 as well. R^3 represents hydrogen or a linear or branched alkyl residue with 1 to 8 carbon atoms and preferably denotes hydrogen or a methyl, ethyl, propyl or butyl group, wherein hydrogen or the methyl group are most preferred. The composition contains the compound of formula (II) in an amount of from 1 to 20 wt.-%, preferably of from 3 to 15 wt.-%.

[0018] The polyols represented by the general formula X-CH_2-$(CHY)_n$-CH_2-Z (III) wherein n is an integer of from 0 to 2 and X,Y and Z independently symbolize hydrogen or a hydroxyl group provided that at least 2 hydroxyl groups are present, are exemplified by ethylene glycol, 1,2-propylene glycol, 1,3-propylene glycol, glycerine, 1,4-butylene glycol and mixtures thereof, wherein 1,2-propylene glycol is most preferred. The inventive composition contains water and/or the compound of formula (III) preferably in an amount of from 5 to 70 wt.-%, preferably from 20 to 45 wt.-%, wherein the water content preferably ranges from 15 to 50 wt.-%, more preferred from 25 to 38 wt.-%, and the content of the compound of formula (III) preferably ranges from 3 to 20 wt.-%, more preferred from 5 to 15 wt.-%, based on the whole composition. In case that water as well as polyol corresponding to formula (III) are present their weight ratio preferably is in the range of from 1:1 to 7:1, and particularly in the range of from 2:1 to 4,5:1. In a further preferred embodiment the weight ratio of alcohol or ether of the general formula (II), respectively, to polyol lies in the range of from 1:1 to 1:15, preferably 1:1,5 to 1:10.

[0019] The solid phase of the inventive composition is formed from the alkalinity source and organic and anorganic builders. Optionally further particulate auxiliaries may be incorporated. The solid phase should be dispersed in the liquid phase as homogeneous as possible. If the particulates are not fine enough to appropriately form a paste they may be grinded one or more times by conventional methods as known in the art.

[0020] The inventive composition preferably contains one or more alkalinity sources in a total amount of from 10 to 30 wt,-%, preferably of from 15 to 25 wt.-%, based on the whole concentrate. Generally they belong to the solid phase of the paste. Under using conditions the alkalinity source(s) provide(s) a washing liquor with a pH value in the range of from 8 to 13, preferably of from 10 to 12 (measured in form of a solution of 1 wt.-% of the composition in ion exchanged water). Alkalihydroxide, especially sodium hydroxide which advantageously may be used in form of a 50 wt.-% aqueous solution, represents a preferred alkalinity source. Moreover, alkali carbonate and alkali hydrogen carbonate, like for example sodium carbonate, represent appropriate alkalinity sources.

[0021] The one or more anorganic builders on a non-silicate basis and organic builders are present in the composition in an amount of from 8 to 45 wt.-%, preferably 12 to 30 wt.-%, based on the whole composition. The most appropriate anorganic builder which is on a non-silicate basis is represented by sodium carbonate which as well functions as alkalinity source. Sodium hydrogencarbonate or borate compounds, especially alkali borates, more preferred borax, may as well be used.

[0022] Organic builders may be exemplified by monomer polycarboxylic acids or hydroxycarboxylic acids like citric acid or gluconic acid as well as amino polycarboxylic acids and poly phosphonic acids. Examples for amino carboxylic acids are nitrilotriacetic acid, ethylene diamine tetraacetic acid, diethylene triamine pentaacetic acid and higher homologues thereof, wherein N,N-bis(carboxymethyl) aspartic acid is preferred. Suitable polyphosphonic acids may be represented by 1-hydroxyethane-1,1-diphosphonic acd, aminotri(methylene phosphonic acid), ethylene diamine tetra(methylenephosphonic acid) and higher homologues thereof, like for example diethylene tetraamine tetra(methylene phosphonic acid). The above mentioned acids are generally applied in form of their alkali metal salts, especially their sodium or potassium salts.

[0023] Moreover, homopolymer and/or copolymer carboxylic acids or alkali salts thereof, respectively, and particularly their sodium or potassium salts, also represent suitable organic builders. In a preferred embodiment polymer carboxylates or polymer carboxylic acids, respectively, having a relative molecular weight of at least 350, in form of their water-soluble salts, especially in form of their sodium or potassium salts, are applied, like oxidized polysaccharides according to International patent application WO 93/08251, polyacrylates, polymethacrylates, polymaleates and, in particular, copolymers of acrylic acid with maleic acid or maleic anhydride, preferably those containing 50 to 70% acrylic acid and 50 to 10% maleic acid which are characterized, for example, in European patent EP 022 551. The relative molecular weight

of the homopolymers is generally between 1,000 and 100,000 while the relative molecular weight of the copolymers is between 2,000 and 200,000, and preferably between 50,000 and 120,000, based on free acid. A particularly preferred acrylic acid/maleic acid copolymer has a relative molecular weight of from 50,000 to 100,000, more preferred 60,000 to 80,000.

[0024] Suitable but less preferred compounds of this class are copolymers of acrylic acid or methacrylic acid with vinyl ethers, such as vinyl methyl ethers, vinyl esters, ethylene, propylene and styrene, in which the acid makes up at least 50% by weight. Other suitable water-soluble organic builders in form of polymer carboxylates or carboxylic acids are terpolymers which contain two unsaturated acids and/or salts thereof as monomers and vinyl alcohol and/or a vinyl alcohol derivative or a carbohydrate as the third monomer. The first acidic monomer or its salt is derived from a monoethylenically unsaturated C_{3-8} carboxylic acid and preferably from a C_{3-4} monocarboxylic acid, more especially (meth)acrylic acid. The second acidic monomer or its salt may be a derivative of C_{4-8} dicarboxylic acid, maleic acid being particularly preferred. The third monomer unit in this case will be formed from a vinyl alcohol and/or preferably an esterified vinyl alcohol. Especially preferred are vinyl alcohol derivatives which form an ester of short chain carboxylic acids, like C_1-C_4 carboxylic acids, with vinyl alcohol. Preferred terpolymers contain 60 to 95 wt-%, particularly 70 to 90 wt.-% (meth)acrylic acid or (meth)acrylate, respectively, more particular acrylic acid or acrylate, respectively, and maleic acid or maleinate and 5 to 40 wt.-%, preferably 10 to 30 wt.-% vinyl alcohol and/or vinyl acetate. Especially preferred are terpolymers with a weight ration of (meth)acrylic acid and maleic acid or maleinate of between 1:1 and 4:1, preferably between 2:1 and 3:1 and especially 2:1 and 2,5:1, with the amounts as well as the weight ratios being based on the acid.

[0025] The second monomer or its salt may also be a derivative of an allyl sulfonic acid substituted in the 2-position by an alkyl group, preferably a C_1-C_4 alkyl group, or an aryl group which is preferably derived from benzene or a benzene derivative. Preferred terpolymers contain 40 to 60 wt.-%, in particular 45 to 55 wt.-% (meth)acrylic acid or (meth)acrylate, more preferred acrylic acid or acrylate, 10 to 30 wt.-%, particularly 15 to 25 wt.-% methallyl sulfonic acid or methallyl sulfonate and as third monomer 15 to 40 wt.-%, preferably 20 to 40 wt.-% of a carbohydrate. Said carbohydrate, for example, may be a mono, di, oligo or polysaccharide, with mono, di or oligosaccharide being preferred. Saccharose is most preferred.

[0026] By applying the third monomer breaking points are implemented into the polymer which probably result in the good biodegradability properties of said polymers. Polymers which are completely or at least in part neutralized, particularly to more than 50% based on the carboxylic groups which are present, are especially preferred.

[0027] Most preferred polymeric polycarboxylates may be produced by the method described in German patent DE 42 21 381 and German patent application DE 43 00 772. The polyacetal carboxylic acids described, for example, in U.S. Pat. Nos. 4,144,226 and 4,146,495, which are obtained by polymerization of esters of glycolic acid, introduction of stable terminal groups and saponification to the sodium or potassium salts are also suitable, as are polymeric acids obtained by polymerziation of acrolein and Cannizzaro disproportionation of the polymer with strong alkalis. They are essentially made of acrylic acid units and vinyl alcohol units or acrolein units.

[0028] The composition of the present invention is essentially free from graying inhibitors on a cellulose base, silicates and phosphates. In this context essentially free means that the content based on the whole composition is below 1 wt.-%, preferably below 0,5 wt.-% and most preferred the composition is totally free from said compounds.

[0029] Graying inhibitors on a cellulose base which are not contained in the inventive composition can be exemplified by cellulose ethers, like carboxymethyl cellulose, methyl cellulose, hydroxyalkyl cellulose, and cellulose containing different ethers, like methyl hydroxyethyl cellulose, methyl hydroxypropyl cellulose and methyl carboxymethyl cellulose.

[0030] Crystalline alkali silicates, as well as alkali alumosilicates, especially zeolites, for example, belong to the silicates which are absent in the present composition.

[0031] The above mentioned phosphate compounds which are supposed to be absent comprise all kinds of phosphates commonly used in detergent compositions like primary, secondary or tertiary orthophosphates, as well as condensed phosphates derived therefrom , the so called meta phosphates and poly phosphates.

[0032] Providing a detergent or cleaning composition which is free of phosphates is very attractive from an ecological point of view as well as from an economical point of view. Phosphates are very important for the growth of autotrophic organisms. To reduce eutrophication of rivers and lakes it is necessary to decrease the amount of phosphates discharged therein. Accordingly, providing a phosphate free detergent or cleaning composition has the advantage that it is not necessary to provide purification units to remove the phosphates from the waste water accumulated during the washing or cleaning process. This results in a reduction of costs with respect to the process as such. Moreover, resources may be saved.

[0033] The present composition may comprise further auxiliaries and additives which are commonly known to be used in detergent and cleaning compositions, like enzymes, soil-release components, optical brighteners, foam regulating agents, dye inhibitors or intensifiers and/or perfumes.

[0034] From a practical point of view, it is preferred that the composition is prepared by first preparing a homogeneous pre-mixture containing the surfactant component a) and the solutizer system comprising the alcohols or ethers according to general formula (II) and water and/or polyols of the general formula (III) and then incorporating the solids and further

additives therein. If it seems necessary to improve the fineness of the particulates to form stable pastes one or more grinding steps may be applied.

[0035] The inventive composition exhibits at 25°C a viscosity of from 100,000 mPas to 500,000 mPas, more preferred 300,000 to 500,000 mPas at 5 revolutions per minute and a viscosity of from 15 000 mPas to 80 000 mPas, more preferred 30,000 to 60,000 mPas at 50 revolutions per minute, each measured using a Brookfield rotational viscometer (spindle no. 7) under otherwise identical conditions.

[0036] Moreover, the concentrate exhibits such a structural viscosity that it does not flow under the influence of gravity. However, on shear the viscosity tremendously decreases which enables the concentrate to flow under the influence of gravity. The dosing of such a thixotropic composition is then preferably performed by shearing the concentrate to reduce viscosity at first and afterwards dosing and transmitting the free-flow concentrate using for example a feed pump. The above mentioned viscosity values refer to reading after a detection time of 3 minutes to take the time dependency of the thixotropic effect into account. The decrease of viscosity on shear is to a great extent reversible, i. e. after having stopped the shear the concentrate will return to its original physical condition without separation.

[0037] The present invention also refers to a method for washing textiles using the above mentioned composition, especially in commercial laundries. However, such compositions may as well be used in private washing machines, as a cleaning agent in general and/or as a warewashing agent, although the application in commercial laundries is especially advantageous.

[0038] As mentioned above, the inventive composition is membrane friendly, i. e. it neither causes blocking of the membrane or other damages when it is contained in the waster water which is accumulated during the whole washing process or parts thereof and which is supposed to be purified using membrane filtration units. It is even possible that the filtration process comprises one or more reverse osmosis steps. This means, the permeation of the waster water to be purified generally remains stable. The thus obtained purified water may then be re-used in another washing cycle. This results in a decrease of the amount of fresh water required to be added to the washing cycle and accordingly in a reduction of costs and in saving resources.

[0039] Moreover, it has been found that the biodegradability of the inventive composition is not deteriorated but in most cases even improved. This represents a very advantageous property taking into account the ecological demands on detergents and cleaning compositions nowadays.

[0040] The inventive composition will be further described in the following examples which are only meant to exemplify the present invention without restricting its scope.

Examples

[0041] In the following the amounts mentioned refer to wt.-% based on the whole composition unless otherwise indicated.

Table 1

Ingredient	1	2	3	4	5	6	7	8	9	10	C1
2-butyloctane-1-ol	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	3,00
isotridecanol ethoxylate (8 EO)	2,00	2,00	3,00	5,00	5,00	2,00	4,00	4,00	6,00	6,00	9,00
sodium alkyl benzene sulfonate	2,00	2,00	2,00	2,00	2,00	8,00	2,00	2,00	5,00	10,00	1,00
oleic acid	13,00	13,00	13,00	13,00	13,00	6,00	6,00	12,00	15,00	5,00	-
alkyl polyglucoside	-	-	-	-	2,00	1,00	1,50	2,00	1,00	1,00	1,50
propylene glycol	8,50	8,50	8,50	8,50	8,50	8,50	8,50	8,50	-	-	-
distyryl biphenyl derivative	0,125	0,125	0,125	0,125	0,125	0,125	0,125	0,125	0,125	0,125	0,125
1-hydroxy ethylidene(1,1-diphosphonic acid)-Na_2-salt	1,90	1,90	2,00	2,00	2,00	2,00	2,00,	2,00	2,00	2,00	3,50
acrylic-maleic copolymer	4,20	5,00	4,50	4,00	4,00	3,50	3,50	4,00	4,00	4,00	6,00
nitrilo triacetic acid, trisodium salt monohydrate	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00	4,00
sodium carbonate	15,00	15,00	15,00	15,00	15,00	10,00	22,00	5,00	15,00	15,00	-
NaOH, 50% liquid	3,90	3,90	3,90	4,00	4,00	8,00	2,00	10,00	15,00	15,00	36,00
sodium citrate dihydrate	4,75	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,00	5,50
optical brightener	0,375	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
deionized water	35,25	34,20	33,60	34,00	32,00	36,50	35,50	36,00	22,50	27,50	10,00
sodium tripolyphosphate	-	-	-	-	-	-	-	-	-	-	24,00
EO = ethoxylate											

[0042] The compositions 1 and C1 according to table 1 were tested with respect to their washing performance using a common washing cycle at 40°C with pre-wash and artificial soil strips as commercially available, like from WFK. In run 1 4g/kg (kg textile) of the comparative composition C1 was used, in run 2 4g/kg and in run 3 5g/kg of the inventive composition 1 were used. The values obtained according to table 2 refer to percentage of reduction of soil.

Table 2

	washable soil	bleaching soil	enzymatic soil	mineral oil soil
run 1	66	62,3	61,9	68,5
run 2	62	60,8	58,8	68
run 3	64,5	62,9	60,6	68

[0043] The values shown in table 2 indicate that the washing performance of the inventive composition is similar in comparison with the comparative composition.

[0044] With respect to biodegradability, the inventive products according to table 1 do not affect the performance of a wastewater treatment plant. It was even discovered that during the testing of the inventive product the COD- and BOD_5-degradation decreased.

[0045] It was observed that the daily permeate production using a membrane filtration unit comprising at least one reverse osmosis step to purify the waste water obtained from the usage of the inventive composition, accumulated during a test period of 14 days remained stable. Surprisingly, after cleaning the membrane unit which at first was used to purify phosphate containing waste water and afterwards to purify the wastewater obtained from the inventive compositions, the permeate production could be tremendously increased. In contrast thereto when purifying wastewater obtained only from the usage of a phosphate containing composition according to the state of the art the membrane generally is blocked such that the permeate production can be only slightly increased by cleaning the membrane. This means the presence of the inventive composition in the waste water enables an improved cleaning of the membrane partly blocked with phosphates after a use period.

Claims

1. Paste-like cleaning or detergent composition comprising

a) a surfactant component comprising a compound of the general formula R^1-COOM (I) in an amount of from 5 to 25 wt.-%, preferably 8 to 20 wt.-%, based on the whole composition, wherein R^1 represents a linear or branched alkyl- or alkenyl residue with 8 to 22 carbon atoms and M represents an alkali metal ion; 1,5 to 8 wt% based on the whole composition of a fatty alcohol alkoxylate and/or an oxo alcohol alkoxylate with 8 to 22 carbon atoms and an average degree of alkoxylation of at least 5; and
an anionic surfactant selected from the compounds comprising C_8-C_{18}-alkyl sulfates, C_8-C_{18}-alkyl ether sulfates, C_8-C_{18}-alkylsulfonates, C_8-C_{18}-α-olefinsulfonates, sulfonated C_8-C_{18}-fatty acids, C_8-C_{18}-alkylbenzenesulfonates, sulfosuccinic mono- and di-C_1-C_{12}-alkyl esters, C_8-C_{18}-alkyl polyglycol ether carboxylates, C_8-C_{18}-N-acyl taurides, C_8-C_{18}-N-sarcosinates, C_8-C_{18}-alkyl isethionates and mixtures thereof;
b) a compound of the general formula R^2-O-R^3 (II) in an amount of from 1 to 20 wt.-%,
based on the whole composition wherein R^2 represents a linear or branched alkyl or alkenyl residue with 8 to 22 carbon atoms and R^3 represents hydrogen or a linear or branched alkyl residue with 1 to 8 carbon atoms;
c) water and/or a compound of the general formula X-CH_2-$(CHY)_n$-CH_2-Z (III), wherein n is an integer of from 0 to 2 and X, Y and Z independently symbolize hydrogen or a hydroxyl group provided that at least 2 hydroxyl groups are present;
d) one or more alkalinity sources, and
e) one or more organic and anorganic builders on a non-silicate basis in an amount of from 8 to 45 wt.-%;

wherein the composition essentially is free from graying inhibitors on a cellulose basis, silicates and phosphates, i.e. the content based on the whole composition is below 1 wt.-%, and exhibits at 25 °C a viscosity of from 100.000 to 500.000 mPas at 5 revolutions per minute and a viscosity of from 15,000 mPas to 80,000 mPas at 50 revolutions per minute, each measured using a Brookfield rotational viscosimeter (spindle no. 7) under otherwise identical conditions.

2. Composition according to claim 1 , **characterized in that** it contains the anionic surfactant in an amount of up to

15 wt.-%, preferably of from 1,5 to 8 wt.-%, based on the whole composition.

3. Composition according to claims 1 or 2, **characterized in that** it contains the compound of formula (II) in an amount of from 3 to 15 wt.-%, based on the whole composition.

4. Composition according to claims 1 to 3, **characterized in that** it contains water and/or compound of formula (III) in an amount of from 5 to 70 wt.-%, wherein the water content preferably is from 15 to 50 wt.-% and the content of the compound of formula (III) preferably is from 3 to 20 wt.-%, more preferred from 5 to 15 wt.-% all based on the whole composition.

5. Composition according to claims 1 to 4, **characterized in that** it contains the alkalinity source in an amount of from 10 to 30 wt,-%, preferably of from 15 to 25 wt.-%, based on the whole composition.

6. Composition according to claims 1 to 5, **characterized in that** it contains organic and anorganic builders in an amount of from 12 to 30 wt.-%, based on the whole composition.

7. Composition according to claims 1 to 6, **characterized in that** the alkoxylate in the fatty alcohol alkoxylate and/or an oxo alcohol alkoxylate is represented by ethoxylate and/or propoxylate.

8. Method for washing textiles using the composition according to claims 1 to 7.

9. Method according to claim 8, **characterized in that** the waste water accumulated during the whole washing process or parts thereof is purified using one or more membrane filtration units.

10. Method according to claims 8 or 9, **characterized in that** the filtration process comprises one or more reverse osmosis steps.

11. Use of the composition according to claims 1 to 7 as a detergent in a commercial laundry and/or in private washing machines, as cleansing agent and/or as warewashing agent.

Patentansprüche

1. Pastenartige Reinigungs- oder Waschmittelzusammensetzung umfassend

a) eine Tensidkomponente, umfassend eine Verbindung der allgemeinen Formel R^1-COOM (I) in einer Menge von 5 bis 25 Gew.-%, vorzugsweise 8 bis 20 Gew.-%, bezogen auf die gesamte Zusammensetzung, wobei R^1 einen linearen oder verzweigten Alkyl- oder Alkenylrest mit 8 bis 22 Kohlenstoffatomen und M ein Alkalimetallion darstellt;
1,5 bis 8 Gew.-% bezogen auf die gesamte Zusammensetzung eines Fettalkoholalkoxylats und/oder eines Oxoalkoholalkoxylats mit 8 bis 22 Kohlenstoffatomen und einem mittleren Alkoxylierungsgrad von mindestens 5; und ein anionisches Tensid ausgewählt aus den Verbindungen umfassend C_8-C_{18}-Alkylsulfate, C_8-C_{18}-Alkylethersulfate, C_8-C_{18}-Alkylsulfonate, C_8-C_{18}-α-Olefinsulfonate, sulfonierte C_8-C_{18}-Fettsäuren, C_8-C_{18}-Alkylbenzolsulfonate, Sulfobernsteinsäuremono- und -di-C_1-C_{12}-Alkylester, C_8-C_{18}-Alkylpolyglykolethercarboxylate, C_8-C_{18}-N-Acyltauride, C_8-C_{18}-N-Sarcosinate, C_8-C_{18}-Alkylisethionate und Gemische davon;
b) eine Verbindung der allgemeinen Formel R^2-O-R^3 (II) in einer Menge von 1 bis 20 Gew.-%, bezogen auf die gesamte Zusammensetzung, wobei R^2 einen linearen oder verzweigten Alkyl- oder Alkenylrest mit 8 bis 22 Gew.-% Kohlenstoffatomen und R^3 Wasserstoff oder einen linearen oder verzweigten Alkylrest mit 1 bis 8 Kohlenstoffatomen darstellt;
c) Wasser und/oder eine Verbindung der allgemeinen Formel X-CH_2-$(CHY)_n$-CH_2-Z (III), wobei n eine ganze Zahl von 0 bis 2 ist und X, Y und Z unabhängig voneinander Wasserstoff oder eine Hydroxylgruppe symbolisieren, vorausgesetzt, dass mindestens 2 Hydroxylgruppen vorhanden sind;
d) eine oder mehrere Alkalinitätsquelle(n), und
e) einen oder mehrere organische und anorganische Builder auf Nichtsilikatbasis in einer Menge von 8 bis 45 Gew.-%;

wobei die Zusammensetzung im Wesentlichen frei von Vergrauungsinhibitoren auf Cellulosebasis, Silikaten und Phosphaten ist, d. h., dass der Gehalt bezogen auf die gesamte Zusammensetzung unter 1 Gew.-% liegt und bei

25 °C eine Viskosität von 100.000 bis 500.000 mPas bei 5 Umdrehungen pro Minute und eine Viskosität von 15.000 mPas bis 80.000 mPas bei 50 Umdrehungen pro Minute aufweist, jeweils gemessen mit einem Brookfield-Rotationsviskosimeter (Spindel Nr. 7) unter ansonsten identischen Bedingungen.

2. Zusammensetzung nach Anspruch 1, **dadurch gekennzeichnet, dass** sie das anionische Tensid in einer Menge von bis zu 15 Gew.-%, vorzugsweise von 1,5 bis 8 Gew.-%, bezogen auf die gesamte Zusammensetzung enthält.

3. Zusammensetzung nach den Ansprüchen 1 oder 2, **dadurch gekennzeichnet, dass** sie die Verbindung der Formel (II) in einer Menge von 3 bis 15 Gew.-% bezogen auf die gesamte Zusammensetzung enthält.

4. Zusammensetzung nach den Ansprüchen 1 bis 3, **dadurch gekennzeichnet, dass** sie Wasser und/oder eine Verbindung der Formel (III) in einer Menge von 5 bis 70 Gew.-%, enthält, wobei der Wassergehalt vorzugsweise 15 bis 50 Gew.-% beträgt und der Gehalt der Verbindung der Formel (III) bevorzugt bei 3 bis 20 Gew.-%, besonders bevorzugt bei 5 bis 15 Gew.-% liegt, alle bezogen auf die gesamte Zusammensetzung.

5. Zusammensetzung nach den Ansprüchen 1 bis 4, **dadurch gekennzeichnet, dass** sie die Alkalinitätsquelle in einer Menge von 10 bis 30 Gew.-%, vorzugsweise von 15 bis 25 Gew.-%, bezogen auf die gesamte Zusammensetzung enthält.

6. Zusammensetzung nach den Ansprüchen 1 bis 5, **dadurch gekennzeichnet, dass** sie organische und anorganische Builder in einer Menge von 12 bis 30 Gew.-%, bezogen auf die gesamte Zusammensetzung enthält.

7. Zusammensetzung nach den Ansprüchen 1 bis 6, **dadurch gekennzeichnet, dass** das Alkoxylat in dem Fettalkoholalkoxylat und/oder ein Oxoalkoholalkoxylat durch Ethoxylat und/oder Propoxylat dargestellt wird.

8. Verfahren zum Waschen von Textilien unter Verwendung der Zusammensetzung nach den Ansprüchen 1 bis 7.

9. Verfahren nach Anspruch 8, **dadurch gekennzeichnet, dass** das Abwasser, das sich während des gesamten Waschprozesses oder Teilen davon angesammelt hat, unter Verwendung einer oder mehrerer Membranfiltrationseinheit(en) gereinigt wird.

10. Verfahren nach den Ansprüchen 8 oder 9, **dadurch gekennzeichnet, dass** der Filtrationsprozess einen oder mehrere Umkehrosmoseschritt(e) umfasst.

11. Verwendung der Zusammensetzung nach den Ansprüchen 1 bis 7 als Waschmittel in einer gewerblichen Wäscherei und/oder in privaten Waschmaschinen, als Reinigungsmittel und/oder als Spülmittel.

Revendications

1. Composition de nettoyage ou détergente sous forme de pâte, comprenant

a) un composant tensioactif comprenant un composé de formule générale R^1-COOM (I) en une quantité comprise entre 5 et 25 % en poids, de préférence entre 8 et 20 % en poids par rapport à l'ensemble de la composition, R^1 représentant un résidu alkyle ou alcényle linéaire ou ramifié ayant 8 à 22 atomes de carbone et M représentant un ion de métal alcalin ;
1,5 à 8 % en poids, sur la base de l'ensemble de la composition d'un alcoxylate d'alcool gras et/ou d'un alcoxylate d'alcool oxo ayant 8 à 22 atomes de carbone et un degré moyen d'alcoxylation d'au moins 5 ; et
un tensioactif anionique choisi parmi les composés comprenant des sulfates d'alkyle en C_8-C_{18}, des sulfates d'éther d'alkyle en C_8-C_{18}, des alkylsulfonates en C_8-C_{18}, des α-oléfinesulfonates en C_8-C_{18}, des acides gras sulfonés en C_8-C_{18}, des alkylbenzènesulfonates en C_8-C_{18}, des esters d'alkyle sulfosucciniques mono et di-C_1-C_{12}, des carboxylates d'éther d'alkylpolyglycol en C_8-C_{18}, des N-acyltaurides en C_8-C_{18}, des N-sarcosinate en C_8-C_{18}, des iséthionates d'alkyle en C_8-C_{18} et leurs mélanges ;
b) un composé de formule générale R^2-O-R^3 (II) en une quantité comprise entre 1 et 20 % en poids par rapport à l'ensemble de la composition, R^2 représentant un résidu alkyle ou alcényle linéaire ou ramifié ayant 8 à 22 atomes de carbone et R^3 représentant un atome d'hydrogène ou un résidu alkyle linéaire ou ramifié ayant 1 à 8 atomes de carbone ;
c) de l'eau et/ou un composé de formule générale X-CH_2-$(CHY)_n$-CH_2-Z (III), n étant un nombre entier compris

entre 0 et 2, et X, Y et Z symbolisant indépendamment un atome d'hydrogène ou un groupe hydroxyle à condition qu'au moins 2 groupes hydroxyle soient présents ;
d) une ou plusieurs sources d'alcalinité, et
e) un ou plusieurs adjuvants organiques et anorganiques sur une base non silicatée en une quantité comprise entre 8 et 45 % en poids ;

la composition étant essentiellement exempte d'inhibiteurs de grisaillement sur base de cellulose, de silicates et de phosphates, c'est-à-dire que la teneur par rapport à l'ensemble de la composition est inférieure à 1 % en poids, et qu'elle présente à 25 °C une viscosité de 100 000 à 500 000 mPas à 5 tours par minute et une viscosité de 15 000 à 80 000 mPas à 50 tours par minute, mesurées chacune à l'aide d'un viscosimètre rotatif Brookfield (fuseau n° 7) dans des conditions par ailleurs identiques.

2. Composition selon la revendication 1, **caractérisée en ce qu'**elle contient le tensioactif anionique en une quantité allant jusqu'à 15 % en poids, de préférence comprise entre 1,5 à 8 % en poids par rapport à l'ensemble de la composition.

3. Composition selon la revendication 1 ou 2, **caractérisée en ce qu'**elle contient le composé de formule (II) en une quantité comprise entre 3 et 15 % en poids par rapport à l'ensemble de la composition.

4. Composition selon les revendications 1 à 3, **caractérisée en ce qu'**elle contient de l'eau et/ou un composé de formule (III) en une quantité comprise entre 5 et 70 % en poids, la teneur en eau étant de préférence comprise entre 15 et 50 % en poids et la teneur du composé de formule (III) étant de préférence comprise entre 3 et 20 % en poids, plus préférablement entre 5 et 15 % en poids, toutes par rapport à l'ensemble de la composition.

5. Composition selon les revendications 1 à 4, **caractérisée en ce qu'**elle contient la source d'alcalinité en une quantité comprise entre 10 et 30 % en poids, de préférence entre 15 et 25 % en poids par rapport à l'ensemble de la composition.

6. Composition selon les revendications 1 à 5, **caractérisée en ce qu'**elle contient des adjuvants organiques et anorganiques en une quantité comprise entre 12 et 30 % en poids par rapport à l'ensemble de la composition.

7. Composition selon les revendications 1 à 6, **caractérisée en ce que** l'alcoxylate dans l'alcoxylate d'alcool gras et/ou un alcoxylate d'alcool oxo est représenté par un éthoxylate et/ou un propoxylate.

8. Procédé de lavage de textiles à l'aide de la composition selon les revendications 1 à 7.

9. Procédé selon la revendication 8, **caractérisé en ce que** les eaux usées accumulées pendant tout le processus de lavage ou des parties de celui-ci sont purifiées à l'aide d'au moins une unité de filtration sur membrane.

10. Procédé selon les revendications 8 ou 9, **caractérisé en ce que** le processus de filtration comprend au moins une étape d'osmose inverse.

11. Utilisation de la composition selon les revendications 1 à 7 comme détergent dans une blanchisserie commerciale et/ou dans des machines à laver privées, comme agent de nettoyage et/ou comme agent de lavage de vaisselle.

REFERENCES CITED IN THE DESCRIPTION

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