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(54) **HIGHLY VISCOUS BLEACH GEL**

(57) The present application refers to a viscous bleach composition having a viscosity of at least 10,000 mPas at 20 °C, said composition comprising at least one bleach compound in an amount from 0.3 % as to 1.7 % as,
at least two surfactants, said surfactants being selected from anionic surfactant, nonionic surfactant, zwitterionic surfactant, ampholytic surfactant, and cationic surfactant, the total amount of surfactant being within the range of from 2 % as to 20 % as, said composition being free of thickeners.

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Description

[0001] The present application relates to the technical field of cleaning hard surfaces. It refers to a viscous bleach composition, comprising at least one bleach compound and at least two surfactants. Said composition has a high viscosity but is free of any thickeners.

[0002] For cleaning surfaces, usually compounds comprising surfactants are used. But some dirt or soil cannot be removed by surfactants only, but enzymes and/or bleach are used to improve the cleaning efficiency. Respective cleaning agents are usually liquid and are applied as a spray to the area from which the dirt shall be removed.

[0003] A respective spray distributes the active agent, namely surfactant and bleach and/or enzyme homogenously to a quite large area. The disadvantage is, that the liquid stays on the surface to be cleaned only if the surface is flat. When, e.g., a wall shall be cleaned, for example in a bath room, the liquid runs down the wall and there is only little contact between the soil and the cleaning agent. A longer contact time would increase the cleaning efficiency. Additionally, when applying a liquid comprising a bleaching agent as a spray, it usually splashes and thus, the risk occurs that clothes by the user or other surfaces near by the area to be cleaned are somehow damaged by the liquid bleach product.

[0004] Thus, there is a need of bleach products which can easily be applied to different hard surfaces thereby enabling contact for a longer time with the dirt or spoils compared to common liquid compositions, and at the same time the safety for the user shall be increased. Surprisingly it was found that a bleach composition comprising specific amount of an active bleach compound as well as at least two surfactants which are of course distinguished from each other, enables production of bleach compounds in jelly and high viscous form.

[0005] Thus, in a first aspect the problem of the present invention is solved by a viscous bleach composition having a viscosity of at least 10,000 mPas at 20 °C, said composition comprising at least one bleach compound in an amount from 0.3 % as to 1.7 % as,
at least two surfactants, said surfactants being selected from anionic surfactant, nonionic surfactant, zwitterionic surfactant, ampholytic surfactant, and cationic surfactant,
the total amount of surfactant being within the range of from 2 % as to 20 % as,
said composition being free of thickeners.

[0006] Surprisingly it was found that the specific disclosed combination enables the production of a compound with a high viscosity at room temperature without the need of any thickening agents or salts for thickening. A composition of the present invention therefore eases the cleaning of vertical surfaces and no areas such as grout and increases safety concerns associated with liquid bleach products e. g. splash or damaging fabrics or other surfaces near by the area to be cleaned. All amounts of surfactants and bleach compound are in % as (% active substance), if not explicitly stated different.

[0007] The bleach composition according to the present invention has a viscosity of at least 10,000 mPas at 20 °C. Preferably, the viscosity is at least 12,000 mPas, especially at least 15,000 mPas, especially preferred at least 17,000 mPas, preferred at least 20,000 mPas, all at 20 °C. The viscosity was measured using a Brookfiled Viscosimeter DV2T with Spindle number 31.

[0008] The composition comprises at least one bleach compound in an amount of from 0.3 % as to 1.7 % as. The amount of the bleach composition is preferably at least 0.3 % as, especially at least 0.4 % as, preferably at least 0.5 % as especially preferred at least from 0.6 % as, preferably at least 0.65 % as, especially at least 0.7 % as and preferred at least 0.75 % as. It is shown that these amounts of bleach compounds are sufficient to obtain the jelly bleach composition with the above-mentioned viscosity.

[0009] Amounts of the bleach of 1.7 % as are sufficient to get a good bleaching performance. At the same time, in case the amount of bleach is too high, the viscosity will decrease again. Thus, the amount of active bleach compound shall not exceed 1.7 % as. Preferably, it is 1.6 % as or less, especially 1.5 % as or less, preferred 1.4 % as or less, preferably 1.3 % as or less, especially preferred 1.25 % as or less.

[0010] The composition according to the present invention further comprises at least two surfactants, which are different from each other. The surfactants are selected from anionic surfactant, nonionic surfactant, zwitterionic surfactant, ampholytic surfactant and cationic surfactant. Within the scope of the present application is therefore a combination of for example two anionic surfactants, two nonionic surfactants, two zwitterionic surfactants etc. But also, within the scope of the present invention is a combination of one ionic surfactant and one nonionic surfactant or at least one ionic surfactant and at least one zwitterionic surfactant or at least one nonionic surfactant and at least one cationic surfactant etc. In one preferred embodiment, the composition comprises at least one anionic surfactant and at least one nonionic surfactant.

[0011] The total amount of surfactant is within a range of from 2 % as to 20 % as. Surprisingly it was found that these relatively low amounts of total surfactant are sufficient to provide good cleaning performance together with the above-mentioned amount of bleach compound. At the same time, this range of surfactants enables a stable high viscous bleach composition, without the need of any thickeners. Preferably, the composition is also free of salts, which would also work as thickeners.

[0012] Preferably, the composition comprises at least two surfactants, wherein at least one surfactant is an anionic

surfactant and the other is at least one nonionic surfactant. The amount of anionic surfactant is in this preferred embodiment within a range of from 1 % as to 10 % as, preferably from 2 % as to 9 % as, in some embodiments it is from 3 % as to 8 % as, preferably from 2 % as to 8 % as, especially from 4 % as to 7 % as or from 5 % as to 6 % as, especially it is from 3 % as to 5 % as or from 4 % as to 6 % as. Again, this amount of anionic surfactants enables the production of a viscous bleach composition with a high viscosity. Such jelly composition enables an improved handling together with improved security for the user.

[0013] In the preferred embodiment, where the composition comprises at least one anionic surfactant and at least one nonionic surfactant, the amount of the nonionic surfactant is within a range of from 1 % as to 10 % as, preferably from 2 % as to 9 % as, in some embodiments it is from 3 % as to 8 % as, preferably from 2 % as to 8 % as, especially from 4 % as to 7 % as or from 5 % as to 6 % as, especially it is from 3 % as to 5 % as or from 4 % as to 6 % as.

[0014] Therefore, in a preferred embodiment, the present application refers to viscous bleach composition having a viscosity of at least 10,000 mPas at 20 °C, said composition comprising at least one bleach compound in an amount from 0.3 by weight to 1.7 % as, at least two surfactants, wherein at least one surfactant is an anionic surfactant and at least one surfactant is an nonionic surfactant, the total amount of surfactant being within the range of from 2 % as to 20 % as, the amount of the anionic surfactant being within a range of from 1 % as to 10 % as in the amount of the nonionic surfactant being also within the range of from 1 % as to 10 % as, said composition being free of thickeners. This composition enables the production of a stable jelly viscous bleach composition with high viscosity at room temperature.

[0015] The ratio of the amount of the at least one anionic surfactant to the at least one nonionic surfactant is preferably within a range from 1:1 to 2:1, especially from 1:1 to 1.5 :1. The ration of the total amount of surfactant to the amount of bleach compound is preferably within a range from 40:1 to 5:1, especially from 30:1

[0016] Suitable bleach compounds are those known for the person skilled in the art. Preferably, it is selected from alkali or earth alkali salt of hypochlorous acid. Preferably, it is sodium hypochlorite. Sodium hypochlorite is known to have a high bleaching activity. At the same time handling in the production is manageable also on the safety aspects.

[0017] Suitable surfactants, which can be used according to embodiments of the present invention are described in the following:

Sulfonates and/or sulfates may preferably be used as the anionic surfactant. The anionic surfactant content is from about 1% to about 10% as and preferably from about 2 % to about 8 % as, each based on 100% of the total bleach composition.

[0018] Preferred surfactants of the sulfonate type include C_{9-13} alkylbenzene sulfonates, olefin sulfonates, i.e., mixtures of alkene and hydroxyalkane sulfonates as well as disulfonates such as those obtained, for example, from C_{12-18} monoolefins with terminal or internal double bonds by sulfonation with gaseous sulfur trioxide and subsequent alkaline or acidic hydrolysis of the sulfonation products. Also suitable are C_{12-18} alkanesulfonates and the esters of α-sulfofatty acids (ester sulfonates), for example, the α-sulfonated methyl esters of hydrogenated coconut fatty acids, palm kernel fatty acids or tallow fatty acids.

[0019] The alkali salts and in particular the sodium salts of the sulfuric acid hemiesters of the C_{12-C18} fatty alcohols, for example, those from coconut fatty alcohol, tallow fatty alcohol, lauryl, myristyl, cetyl or stearyl alcohol or C_{10}-C_{25} oxo alcohols and the hemiesters of secondary alcohols of these chain lengths are preferred as the alk(en)yl sulfates. Of technical interest are the C_{12}-C_{16} alkyl sulfates and the C_{12}-C_{15} alkyl sulfate as well as the C_{14}-C_{15} alkyl sulfates are preferred. Also 2,3-alkyl sulfates are suitable anionic surfactants.

[0020] In one embodiment, the anionic surfactant is a polyethoxylated alcohol sulfate, such as those sold under the trade name CLAFOAM® 303 (Pilot Chemical Company, California). Such materials, also known as alkyl ether sulfates (AES) or alkyl polyethoxysulfates, correspond to the following formula (I)

$$R'\text{-}O\text{-}(C_2H_4O)_n\text{-}SO_3M'$$

wherein R' is a C_8-C_{20} alkyl group, n is from 1 to 20, and M' is a salt-forming cation; preferably, R' is C_{10}-C_{18} alkyl, n is from 1 to 15, and M' is sodium, potassium, ammonium, alkylammonium, or alkanolammonium. In another embodiment, R' is a C_{12}-C_{16} alkyl, n is from 1 to 6, and M' is sodium. In another embodiment, the alkyl ether sulfate is sodium lauryl ether sulphate (SLES) and n is from 1 to 4. In a preferred embodiment, the alkyl ether sulfate is SLES and n is 2.

[0021] The alkyl ether sulfates will generally be used in the form of mixtures comprising varying R' chain lengths and varying degrees of ethoxylation. Frequently such mixtures will inevitably also contain some unethoxylated alkyl sulfate materials, i.e., surfactants of the above ethoxylated alkyl sulfate formula wherein n=0. Unethoxylated alkyl sulfates may also be added separately to the liquid compositions of this invention. Suitable unalkoxylated, e.g., unethoxylated, alkyl ether sulfate surfactants are those produced by the sulfation of higher C_8-C_{20} fatty alcohols. Conventional primary alkyl sulfate surfactants have the general formula of: $ROSO_3M$, wherein R is typically a linear C_8-C_{20} hydrocarbyl group, which may be straight chain or branched chain, and M is a water-solubilizing cation; preferably R is a C_{10}-C_{15} alkyl, and M is alkali metal. In one embodiment, R is C_{12}-C_{14} and M is sodium.

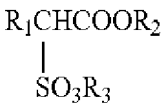
[0022] In one embodiment, the anionic surfactant is a water soluble salt of an alkyl benzene sulfonate having between 8 and 22 carbon atoms in the alkyl group. In one embodiment, the anionic surfactant comprises an alkali metal salt of

C_{10-16} alkyl benzene sulfonic acids, such as C_{11-14} alkyl benzene sulfonic acids. In one embodiment, the alkyl group is linear and such linear alkyl benzene sulfonates are known in the art as "LAS." Other suitable anionic surfactants include sodium and potassium linear, straight chain alkylbenzene sulfonates in which the average number of carbon atoms in the alkyl group is between 11 and 14. Sodium C_{11}-C_{14}, e.g., LAS is one suitable anionic surfactant for use herein. In some embodiments, the composition comprises 2-phenyl alkylbenzene sulfonate.

[0023] Other suitable anionic surfactants include soaps. Suitable examples include saturated and unsaturated fatty acid soaps, such as the salts of lauric acid, myristic acid, palmitic acid, stearic acid, (hydrogenated) erucic acid and behenic acid as well as in particular salt mixtures derived from natural fatty acids, for example, coconut, palm kernel, olive oil or tallow fatty acids.

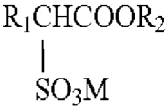
[0024] The anionic surfactants as well as the soaps may be present in the form of their sodium, potassium or magnesium or ammonium salts. The anionic surfactants are preferably present in the form of their ammonium salts. Preferred counterions for the anionic surfactants are the protonated forms of choline, triethylamine, monoethanolamine or methyl ethyl amine.

[0025] In some embodiments, one of the at least two surfactants is an alkylene sulfofatty acid salt (also referred to herein as an α-sulfofatty acid ester), such as a methylester sulfonate (MES) of a fatty acid (e.g., palm oil-based MES). Such a sulfofatty acid is typically formed by esterifying a carboxylic acid with an alkanol and then sulfonating the α-position of the resulting ester. The α-sulfofatty acid ester is typically of the following formula (II):



wherein R_1 is a linear or branched alkane, R_2 is a linear or branched alkane, and R_3 is hydrogen, a halogen, a monovalent or di-valent cation, or an unsubstituted or substituted ammonium cation. R_1 can be a C_4 to C_{24} alkane, including a C_{10}, C_{12}, C_{14}, C_{16}, and/or Cis alkane. R_2 can be a C_1 to C_8 alkane, including a methyl group. R_3 is typically a monovalent or di-valent cation, such as a cation that forms a water soluble salt with the α-sulfofatty acid ester (e.g., an alkali metal salt such as sodium, potassium, or lithium). The α-sulfofatty acid ester of formula (I) can be a methyl ester sulfonate, such as a C_{16} methyl ester sulfonate, a Cis methyl ester sulfonate, or a mixture thereof.

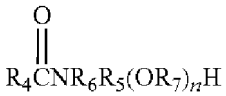
[0026] More typically, the α-sulfofatty acid ester is a salt, which is generally of the following formula (III):



wherein R_1 and R_2 are alkanes and M is a monovalent metal. For example, R_1 can be an alkane containing 4 to 24 carbon atoms, and is typically a C_8, C_{10}, C_{12}, C_{14}, C_{16}, and/or Cis alkane. R_2 is typically an alkane containing 1 to 8 carbon atoms, and more typically a methyl group. M is typically an alkali metal, such as sodium or potassium. The α-sulfofatty acid ester of formula (II) can be a sodium methyl ester sulfonate, such as a sodium C_8-C_{18} methyl ester sulfonate.

[0027] Other surfactants suitable for use in preparing the present compositions include additional anionic surfactants, nonionic surfactants, zwitterionic surfactants, ampholytic surfactants, and cationic surfactants.

[0028] Suitable nonionic surfactants include polyalkoxylated alkanolamides, which are generally of the following formula (IV):



wherein R_4 is an alkane or hydroalkane, R_5 and R_7 are alkanes and n is a positive integer. R_4 is typically an alkane containing 6 to 22 carbon atoms. R5 is typically an alkane containing 1-8 carbon atoms. R_7 is typically an alkane containing 1 to 4 carbon atoms, and more typically an ethyl group. The degree of polyalkoxylation (the molar ratio of the oxyalkyl groups per mole of alkanolamide) typically ranges from about 1 to about 100, from about 3 to about 8, or from about 5 to about 6. R_6 can be hydrogen, an alkane, a hydroalkane group, or a polyalkoxylated alkane. The polyalkoxylated alkanolamide is typically a polyalkoxylated mono- or di-alkanolamide, such as a C_{16} and/or Cis ethoxylated monoalkanolamide, or an ethoxylated monoalkanolamide prepared from palm kernel oil or coconut oil.

[0029] Further, suitable nonionic surfactants include alkoxylated fatty alcohols, alkoxylated fatty acid alkyl esters, fatty

acid amides, alkoxylated fatty acid amides, polyhydroxy fatty acid amides, alkyl phenol polyglycol ethers, amine oxides, alkyl polyglucoside and mixtures thereof.

[0030] In a preferred embodiment, the nonionic is an amine oxide, especially an alkyl amine oxide ($R^1R^2R^3NO$). Among the alkyl amine oxides, dimethyl alkyl amine oxides are preferred. Here, R^1 and R^2 are methyl groups. R^3 is an alkyl chain with a chain length of 10 to 16 C-atoms. Suitable compounds are for example obtainable under the tradename Dehyton TL from BASF SE, Germany.

[0031] Alkoxylated, advantageously ethoxylated, in particular primary alcohols preferably with 8 to 18 carbon atoms and an average of 4 to 12 mol ethylene oxide (EO) per mol alcohol are preferably used as the nonionic surfactant, in which the alcohol moiety is linear or may preferably be methyl-branched in position 2 and/or may contain linear and methyl-branched moieties in the mixture such as how they are usually present in oxo alcohols radicals. In particular, however, alcohols ethoxylates with linear radicals from alcohols of native origin with 12 to 18 carbon atoms, for example, from coconut, palm and tallow fatty or oleyl alcohol and an average of 5 to 8 EO per mol alcohol are preferred in particular. The preferred ethoxylated alcohols include, for example, C_{12-14} alcohols with 4 EO or 7 EO, C_{9-11} alcohol with 7 EO, C_{13-15} alcohols with 5 EO, 7 EO or 8 EO, C_{12-18} alcohols with 5 EO or 7 EO and mixture thereof. The stated degrees of ethoxylation are statistical averages which may be a whole number or a fraction for a specific product. Preferred alcohol ethoxylates have a narrow homolog distribution (narrow range ethoxylates, NRE). In addition to these nonionic surfactants, fatty alcohols with more than 12 EO may also be used. Examples of these include tallow fatty alcohol with 14 EO, 25 EO, 30 EO or 40 EO. Nonionic surfactants containing EO and PO groups together in the molecule can also be used as contemplated herein. Also suitable is a mixture of a (more strongly) branch ethoxylated fatty alcohol and an unbranched ethoxylated fatty alcohol such as, for example, a mixture of a C_{16-18} fatty alcohol with 7 EO and 2-propyl-heptanol with 7 EO. In particular, preferably the first composition contains a C12-18 fatty alcohol with 7 EO, a C_{13-15} oxo alcohol with 7 EO and/or a C_{13-15} oxo alcohol with 8 EO as a nonionic surfactant.

[0032] Other suitable nonionic surfactants include those containing an organic hydrophobic group and a hydrophilic group that is a reaction product of a solubilizing group (such as a carboxylate, hydroxyl, amido, or amino group) with an alkylating agent, such as ethylene oxide, propylene oxide, or a polyhydration product thereof (such as polyethylene glycol). Such nonionic surfactants include, for example, polyoxyalkylene alkyl ethers, polyoxyalkylene alkylphenyl ethers, polyoxyalkylene sorbitan fatty acid esters, polyoxyalkylene sorbitol fatty acid esters, polyalkylene glycol fatty acid esters, alkyl polyalkylene glycol fatty acid esters, polyoxyethylene polyoxypropylene alkyl ethers, polyoxyalkylene castor oils, polyoxyalkylene alkylamines, glycerol fatty acid esters, alkylglucosamides, alkylglucosides, and alkylamine oxides. In another embodiment, the composition is substantially free of nonylphenol nonionic surfactants. In this context, the term "substantially free" means less than about one weight percent.

[0033] In some embodiments, the nonionic surfactant is an ethoxylated nonionic surfactant. In some embodiments, the ethoxylated nonionic surfactant is an aliphatic primary alcohol ethoxylate. In some embodiments, the ethoxylated nonionic surfactant is an aliphatic secondary alcohol ethoxylate. In some embodiments, the alcohol ethoxylates are the condensation products of an organic aliphatic or alkyl aromatic hydrophobic compound and hydrophilic ethylene oxide groups. The length of the polyetheneoxy chain can be adjusted to achieve the desired balance between the hydrophobic and hydrophilic elements. The nonionic surfactant class includes the condensation products of a higher alcohol (e.g., an alkanol containing 8 to 16 carbon atoms in a straight or branched chain configuration) condensed with 4 to 20 moles of ethylene oxide, for example, lauryl or myristyl alcohol condensed with 16 moles of ethylene oxide (EO), tridecanol condensed with 6 to moles of EO, myristyl alcohol condensed with 10 moles of EO per mole of myristyl alcohol, the condensation product of EO with a cut of coconut fatty alcohol containing a mixture of fatty alcohols with alkyl chains varying from 10 to 14 carbon atoms in length and wherein the condensate contains either 6 moles of EO per mole of total alcohol or 9 moles of EO per mole of alcohol, and tallow alcohol ethoxylates containing 6 EO to 11 EO per mole of alcohol.

[0034] In some embodiments, the ethoxylated alcohol is a higher aliphatic, primary alcohol containing 9-15 carbon atoms, such as C_9-C_{11} alkanol condensed with 4 to 10 moles of ethylene oxide, C_{12}-C_{15} alkanol condensed with 12 moles ethylene oxide (for example, NEODOL 25-12 (Shell Chemicals, Netherlands)), C_{14}-C_{15} alkanol condensed with 13 moles ethylene oxide (for example, NEODOL 45-13 (Shell Chemicals, Netherlands)), or a C_{12}-C_{14} alkanol condensed with 2, 3, 4, 7, 9, or 10 moles of ethylene oxide. Ethoxylated alcohols containing 9-15 carbon atoms have an HLB (hydrophobic lipophilic balance) value of 8 to 15 and give good oil-in-water emulsification, whereas ethoxylated alcohols with HLB values below 7 contain less than 4 ethylene oxide groups and tend to be poor emulsifiers and poor detergents.

[0035] Additional satisfactory water soluble alcohol ethylene oxide condensates are the condensation products of a secondary aliphatic alcohol containing 8 to 18 carbon atoms in a straight or branched chain configuration condensed with 5 to 30 moles of ethylene oxide. Examples of commercially available nonionic detergents of the foregoing type are C_{12}-C_{14} secondary alkanol condensed with either 9 EO (TERGITOL™ 15-S-9 (Dow Chemical Company, Michigan, United States)) or 12 EO (TERGITOL™ 15-S-12 (Dow Chemical Company, Michigan, United States)).

[0036] In some embodiments, the ethoxylated alcohol is a C_{12}-C_{14} alkanol condensed with 7 moles of ethylene oxide. In some embodiments, the ethoxylated alcohol is a C_{12}-C_{15} ethoxylated alcohol condensed with 7 moles of ethylene

oxide. In some embodiments, the ethoxylated alcohol is NEODOL 25-7 (Shell Chemicals, Netherlands).

[0037] Suitable zwitterionic surfactants can be broadly described as derivatives of secondary and tertiary amines, derivatives of heterocyclic secondary and tertiary amines, or derivatives of quaternary ammonium, quaternary phosphonium or tertiary sulfonium compounds, such as those disclosed in U.S. Pat. No. 3,929,678, which is incorporated by reference herein.

[0038] The composition according to the present invention may also comprise further ingredients such as for example pH stabilizing agents, perfumes, bleach stabilizers, and/or dyes. Respective compounds and maybe also other additives are known for the skilled person. Again, it is to be noted that no thickener is present and against all expectations it is nevertheless possible to obtain a bleach composition with high viscosity.

Claims

1. Viscous bleach composition having a viscosity of at least 10,000 mPas at 20 °C, said composition comprising at least one bleach compound in an amount from 0.3 % as to 1.7 % as,
at least two surfactants, said surfactants being selected from anionic surfactant, nonionic surfactant, zwitterionic surfactant, ampholytic surfactant, and cationic surfactant,
the total amount of surfactant being within the range of from 2 % as to 20 % as,
said composition being free of thickeners.

2. Bleach composition according to claim 1, wherein the amount of the bleach compound is from 0.5 % as to 1.5 % as, especially from 0.75 % as to 1.25 % as.

3. Bleach composition according to any one of claims 1 or 2, wherein it comprises at least one anionic surfactant and at least non-ionic surfactant as surfactant.

4. Bleach composition according to any of claims 1 to 3, wherein the amount of the anionic surfactant is within a range of from 1 % as to 10 % as, preferably from 2 % as to 8 % as, especially from 3 % as to 5 % as.

5. Bleach composition according to any of claims 1 to 4, wherein the amount of the nonionic surfactant is within a range of from 1 % as to 10 % as, preferably from 2 % as to 8 % as, especially from 3 % as to 4 % as.

6. Bleach composition according to any of claims 1 to 5, wherein the active bleach compound is selected from an alkali or earth alkali salt of hypochlorous acid, especially it is sodium hypochlorite.

7. Bleach composition according to any of claims 1 to 6, wherein the at least one anionic surfactant is selected from alkyl ether sulphates of the general formula (I)

$$R'\text{-}O\text{-}(C_2H_4O)_n\text{-}SO_3M' \qquad (I)$$

wherein R' is a C_8-C_{20} alkyl group, n is from 1 to 20, and M' is a salt-forming cation; preferably, R' is C_{10}-C_{18} alkyl, n is from 1 to 15, and M' is sodium, potassium, ammonium, alkylammonium, or alkanolammonium.

8. Bleach composition according to any of claims 1 to 7, wherein the non-ionic surfactant is selected from the group consisting of polyalkoxylated alkanolamides, amine oxides, alkoxylated fatty alcohols, alkoxylated fatty acid alkyl esters, fatty acid amides, alkoxylated fatty acid amides, polyhydroxy fatty acid amides, alkyl phenol polyglycol ethers, alkyl polyglucoside and mixtures thereof, especially it is an alkyl amine oxide.

9. Bleach composition according to any of claims 1 to 8, wherein the viscosity is at least 12,000 mPas at 20 °C.

10. Bleach composition according to any of claims 1 to 9 further comprising one or more of the following ingredients: pH stabilizing agent, perfumes, bleach stabilizer, and/or dyes.

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EUROPEAN SEARCH REPORT

Application Number
EP 19 17 6014

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2008/255017 A1 (DETTINGER JOHANNES [DE] ET AL) 16 October 2008 (2008-10-16) * claims; example * -----	1-10	INV. C11D3/395 C11D17/00
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TECHNICAL FIELDS SEARCHED (IPC)

C11D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	22 July 2019	Vernier, Frédéric

CATEGORY OF CITED DOCUMENTS

X : particularly relevant if taken alone
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EPO FORM 1503 03.82 (P04C01)

ANNEX TO THE EUROPEAN SEARCH REPORT ON EUROPEAN PATENT APPLICATION NO. EP 19 17 6014

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22-07-2019

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REFERENCES CITED IN THE DESCRIPTION

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Patent documents cited in the description

- US 3929678 A **[0037]**