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(71) Applicant: **HENKEL AG & CO. KGAA** [DE/DE]; Henkelstr. 67, 40589 Düsseldorf (DE).

(72) Inventors: **BUISKER, Detlef**; Drosselstraße 6, 45134 Essen (DE). **PEGELow, Ulrich**; Benrodestraße 76, 40597 Düsseldorf (DE). **JIMENEZ CARRILLO, Lidia**; Francesc Català-Roca, 6 - 6o 1a, 08222 Terrassa Barcelona (ES).

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(54) Title: CLEANING COMPOSITION COMPRISING BLEACH

(57) Abstract: The present application refers to a cleaning composition for the manual cleaning of hard surfaces, especially for the manual cleaning of dishes. Said cleaning composition also comprises a chlorine based bleach besides surfactants.



WO 2016/162190 A1

Cleaning composition comprising bleach

The present application refers to a cleaning composition for the manual cleaning of hard surfaces, especially for the manual cleaning of dishes. Said cleaning composition also comprises a chlorine based bleach besides surfactants.

Common liquid cleaning compositions for the manual cleaning of hard surfaces comprise a mixture of different tensides to remove dirt and stains from surfaces. Often, combinations of different types of surfactants, such as anionic, non-ionic, cationic or amphoteric surfactants are used. Such surfactants enable the removal of common stains from the surface. Persistent soilings such as rims from tea or coffee can often not be removed by common surfactant compositions.

In Southern Europe as well as in the Arabian region the consumer often not only uses a liquid cleaning composition but additionally common chlorine bleach during the cleaning process. Common chlorine bleaches usually comprise sodium hypochlorite. This sodium hypochlorite is not stable in cleaning composition comprising high concentration combinations of surfactants. Thus, until now the consumer is forced to have two different kind of cleaning compositions, namely a common cleaning composition comprising different kinds of surfactants as well as chlorine bleach. This use of two different cleaning liquids is impractical.

Therefore, there is a need for a more efficient cleaning composition, especially a cleaning composition with improved bleaching activity for the removal of bleach sensitive dirt from hard surfaces, especially from dishes. The purpose of the present invention is therefore to provide a respective cleaning composition.

This problem is solved by a cleaning composition as claimed in claim 1. It is further solved by the use of a respective cleaning composition for the manual cleaning of hard surfaces and further by a method of cleaning hard surfaces comprising the use of the cleaning composition.

Accordingly, a cleaning composition according to the present invention comprises at least one anionic surfactant as well as chlorine-based bleach. Surprisingly it has been found that a cleaning composition which comprises as main surfactant only anionic surfactants enables a stable composition together with chlorine-based bleach. The use of the bleach increases the bleaching activity of the cleaning composition and thus, especially removal of soils such as soils from tea or coffee or other tannin-containing liquids is simplified. Respective soils are usually referred to as bleach sensitive dirt as they usually can be removed with bleach and to distinguish them from other stains which usually are removed by e.g. tensides.

Chlorine-based bleach within the scope of the present application comprises hypochlorite. Preferably, the chlorine-based bleach is sodium hypochlorite.

The cleaning composition, which is preferably a liquid cleaning composition, should have a pH value of at least 11, in particular the pH value is in the range of from 11 to 13. A pH value of at least 11 is necessary to improve the stability of the sodium hypochlorite in the cleaning composition. At pH values below 10, sodium hypochlorite will not be stable in the composition.

A stable composition according to the present application is a composition in which the bleaching activity of the hypochlorite is still satisfactory for the consumer. The bleaching activity of the hypochlorite gradually decreases with long storage. According to the present application, the bleaching activity should be at least 25 %, preferably at least 30 % of the initial bleaching activity after a four-weeks-storage at 40 °C, to be still convenient for the consumer.

The cleaning composition of the present application also reduces the risk for accidents in the household. Mixing a hypochlorite and especially sodium hypochlorite, which is a strong oxidizer, with other household cleaners can be hazardous. For example, mixing an acid cleaner with hypochlorite bleach generates chlorine gas. Mixing it with ammonia solution produces chloramines. Both, chlorine gas and chloramines gas are toxic. Mixtures of other cleaning agents and/or organic matter can result in gaseous reaction that can cause lung intoxication.

Respective reactions do not occur in the cleaning composition of the present application. Thus, household safety is increased as the mixture of different cleaning compositions at home will be no longer necessary.

The anionic surfactant can be any surfactant which is stable in combination with hypochlorite. Respective anionic surfactants are for example amine oxides, fatty alcohol sulfates, secondary alkane sulphonates and fatty alcohol ether sulfates. Preferably, the cleaning composition comprises at least one anionic surfactant which is selected from the group consisting of fatty alcohol sulfate (FAS), secondary alkane sulphonate (SAS), linear alkylbenzenesulfonates (LAS), and fatty alcohol ether sulfate (FAES).

Preferably the cleaning composition of the present application comprises not only one but a combination of two or more surfactants. A combination of two surfactants in the meaning of the present application can be that the composition comprises e. g. at least two different fatty alcohol sulfates or at least two different fatty alcohol ether sulfates or two or more secondary alkane

sulphonates. Within the scope of the present application is also e. g. a composition of one fatty alcohol sulfate and a secondary alkane sulphonate. Preferably, a combination of two anionic surfactants according to the present application is a combination of two different types of anionic surfactants. Preferably, the anionic surfactant of the present application comprises FAS and/or SAS and/or FAES and/or LAS, such as SAS and FAS, SAS and FAES, SAS and LAS, LAS and FAES, FAS and FAES, or FAS and LAS, or combinations of three or four different types of anionic surfactants.

Surprisingly it has been found that a cleaning composition comprising SAS, FAS and FAES as anionic surfactant is more stable than a composition comprising SAS and FAES only. A stable composition according to the present application has a bleaching activity of at least 50 %, preferably at least 60 % of the initial bleaching activity after storing at 20 °C for four weeks. Preferably, the bleaching activity is at least 25 %, and preferably at least 30 % of the initial bleaching activity after storing at 40 °C for four weeks.

Secondary alkane sulphonates (SAS) are anionic surfactants which are also called paraffin sulphonates. Very good water solubility, high wetting action, pronounced foaming power, excellent grease and soil dispersing properties make SAS an important surfactant ingredient in detergent especially for the manual cleaning of hard surfaces such as dish washing. SAS are generated by sulphonate oxidation of n-paraffins SAS contains a sulphonate group distributed over the n-paraffin chain which is mainly located at one of the secondary C-atoms.

The linear alkyl chain preferably has a linearity of over 98 %. The alkyl chain has preferably 14 to 17 carbon units. Preferably, SAS is a sodium C₁₄-C₁₇ sec.-alkyl sulphonate. The amount of SAS, if present in the cleaning composition of the present application, is preferably in the range of from 0.5 % a.i. to 10 % a.i., especially of from 3 % a.i. to 8 % a.i.

The amount of SAS, and also of the other anionic surfactants of the cleaning composition of the present application is specified as '% active ingredient' (% a.i.). An active ingredient is the substance in a composition which is active. The composition contains the active ingredient and further excipients. These excipients are substances in which the active ingredient is suspended or diluted in which does not participate in the cleaning-step, i. e. they are not active.

The cleaning composition of the present application preferably comprises FAS in an amount in a range of from 0.5 % a.i., especially of from 2 % a.i. to 4 % a.i. FAS is usually used in the form of a salt, especially a salt of an alkali metal. Pronounced foaming properties make FAS an often used ingredient for detergents and especially dish washing detergents. A stable foam which is expected

by the consumer will still be there even if dirt and especially fatty dirt is present on the surface to be cleaned and in the cleaning water respectively.

Fatty alcohol sulfates (FAS) are surfactants in cosmetic cleaning preparations as well as in dish washing and light dirt detergents due to its detergent and foaming properties. The fatty alcohol sulfate according to the present invention preferably comprises 12 to 14 carbon atoms, especially 13 carbon atoms. The FAS is preferably present in the form of its alkaline salt, especially as sodium salt. A preferred composition to be used as FAS is sodium lauryl sulfate, which can be used in technical grade. A technical grade sodium lauryl sulfate mainly consists of chains with a length of 13 carbon atoms. Besides the 13 C-chain there are further 12 and 14 carbon atoms comprising chains. The respective sodium lauryl sulfate can for example be obtained as "Texapon® LS30" which is provided by BASF company.

An amount of 0.5 % a.i. of FAS in the composition, if present, is sufficient for the detergent and foaming properties provided by the FAS. An amount of 4 % a.i., especially of 5 % a.i. is sufficient. The addition of a higher amount of FAS does not improve the cleaning efficiency and thus would only be a waste of money.

Linear alkyl benzene sulphonates (LAS) might also be present as anionic surfactants in the cleaning composition of the present application. LAS are preferred anionic surfactants as they proved to be both highly effective in cleaning and also biodegradable, which is not the case of the branched relatives. LAS usually comprise a benzene group as well as a sulfonic acid group or a sulphonate group respectively. The linear alkyl chain preferably comprises 6 to 22, especially 8 to 20, further preferably 10 to 16 and further 12 to 14 carbon atoms. The alkaline chain might be saturated or singly or multiply unsaturated. The amount of LAS, if present in the cleaning composition of the present application, is preferably in the range of from 0.5 % a.i. to 10 % a.i., especially of from 3 % a.i. to 8 % a.i.

A cleaning composition of the present application can further comprise a fatty alcohol ether sulfates (FAES). If FAES is present, it is preferably in the range of from 0.5 % a.i. to 5 % a.i., especially of from 2 % a.i. to 4 % a.i. A cleaning composition of the present application might comprise one or more FAES. FAES enable the formation of stable foam on top of cleaning water. Such stable foam is expected by the consumer even if fatty stains are present on the surface of the dishes or other surfaces to be cleaned. FAES now enables stable foam even in these cases. An amount of 0.5 % a.i. seems to be sufficient. If high amounts of fatty stains are present, an amount of 2 % a.i. is preferable. An amount of 4 % a.i. FAES is usually sufficient, wherein an amount of more than 5 % a.i. does not lead to a further improvement of the cleaning and/or foaming properties.

FAES are usually prepared by ethoxylation of a fatty alcohol. The resulting ethoxylate is converted to a half ester of sulfuric acid, which is neutralized by conversion to an alkaline salt, usually a sodium salt. Alkoxylated alcohols in the meaning of the present application are reaction products of an alkaline oxide, especially an ethylene oxide, with alcohols. In the present application, alcohols are fatty alcohols, which are long chained alcohols, meaning alcohols with aliphatic linear or single or multi-branched, cyclic or non-cyclic saturated or mono-unsaturated or poly-unsaturated, preferably linear, non-cyclic saturated alcohols with 6 to 22, preferably 8 to 18, especially 10 to 16 and further preferably 12 to 14 carbon atoms. Usually, using n mols ethylene oxide and 1 mol alcohol results in a mixture of different products in different degrees of ethoxylation ($n = 1$ to 30, preferably 1 to 20, especially 1 to 10, further preferably 2 to 4).

In a further aspect of the present application, not only ethylene oxide but also propylene oxide is used. Thus, mixed alkylene oxides can be obtained. Actually preferable in the present application are fatty alcohols with a low degree of ethoxylation with 1 to 4 units ethylene oxide (EO), especially 1 to 2 EO, for example 2 EO such as $\text{Na-C}_{12}\text{-C}_{14}\text{-fatty alcohol} + 2 \text{ EO sulphate}$.

If SAS and FAES are present in the cleaning composition, the ratio (comparing the % a.i.) is preferably within a range of from 8:1 to 1:1, preferably from 6:1 to 1:1, further preferred from 3:1 to 1:1, and especially 1:1. If LAS and FAES are present in the cleaning composition, the ratio (comparing the % a.i.) is preferably within a range of from 8:1 to 1:1, preferably from 6:1 to 1:1, further preferred from 3:1 to 1:1, and especially 1:1. If the cleaning composition of the present application comprises, SAS, FAES and FAS as anionic surfactants, the ratio SAS : FAES : FAS is preferably of from 6:1:1 to 0,7:0,5:0,5, further preferred of from 5:1:1 to 1:0,5:0,5 and especially 1:0,5:0,5.

The total amount of anionic surfactants being present in the cleaning composition of the present application is preferably from 8 % a.i. to 20 % a.i.. Compositions comprising a low amount of anionic surfactant within a range of from 8 % a.i. to 12 % a.i. and especially 10 % a.i. are preferred. Equally preferred are compositions comprising a high level of anionic surfactants within a range of from 13 % a.i. to 20 % a.i., especially of from 14 % a.i. to 17 % a.i. and preferred 20 % a.i.

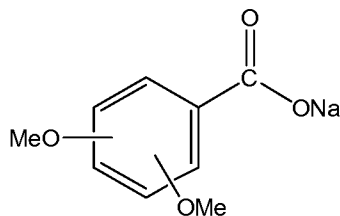
In a preferred embodiment, the cleaning composition of the present application is a liquid cleaning composition for hard surfaces, preferably a liquid cleaning composition for the manual cleaning of dishes.

Besides the mentioned anionic surfactants, the cleaning composition of the present application might comprise further surfactants, such as non-ionic surfactants and/or cationic surfactants and/or amphoteric surfactants. Suitable surfactants are described in the prior art and are well-known by the artisan. As such surfactants do not result in an improvement of the cleaning performance, the cleaning composition of the present application is preferably free of such further surfactants.

The amount of hypochlorite and preferably of sodium hypochlorite in the cleaning composition according to the present application is preferably in the range of from 0.5 % a.i. to 5 % a.i., especially from 0.8 % a.i. to 2 % a.i. An amount of less than 0.5 % a.i. does not lead to sufficient bleaching performance of the cleaning composition of the present application. If the cleaning composition is stored for a long time, an amount of 0.8 % is preferred to ensure even after storage for a long time a sufficient bleaching performance of the cleaning composition. Amounts of more than 2 % and especially of more than 5 % do not lead to an improvement of the bleaching composition. Further, the stability of higher concentrated formulations can decrease, resulting in chemical reactions which might be harmful for the consumer. Therefore, amounts of more than 5 % a.i. of hypochlorite should be avoided.

The cleaning composition of the present application preferably further comprises at least one or several phosphonates. Surprisingly it has been developed that these phosphonates work as stabilizing agent for the sodium hypochlorite and therefore enable a long term storage stability for the cleaning composition according to the present invention. The amount of phosphonate might be in the range of from 0.01 % a.i. to 1.5 % a.i. and preferably of from 0.03 % a.i. to 0.5 % a.i. Higher amounts of phosphonates are not necessary as an improvement of the stability can thus not be obtained. Lower amounts will not lead to an increase in stability. Suitable phosphonates are for example modified phosphoric acids such as Sequion CLR, sold by Giovanni Bozzetto S.p.A (Italy).

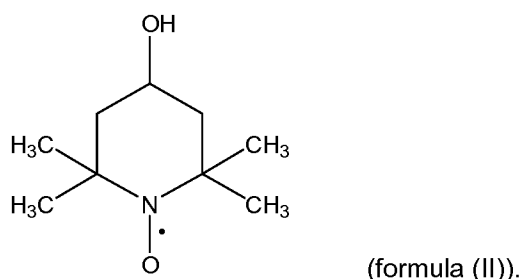
It is possible to add further stabilizers such as dimethoxy benzoic acid or alkoxy benzoates. These alkoxy benzoates might additionally improve the stability of compositions of the present application containing high amounts of surfactants in addition with a hypochlorite. Alkoxy benzoates show potential as stabilizers for high surfactant containing bleach formulas. Alkoxybenzoates preferably are 2,3-, 2,4-, 2,6-, 3,4-, 3,5- or 3,4,5- alkoxy benzoates, wherein the alkoxy-group preferably is methoxy, as shown in the below formula (I):



(formula (I)),

wherein Me means a methyl-group.

Another class of chemical compounds which might be used as additional stabilizer are piperidinyloxy compounds, such as 4-hydroxy-2,2,6,6-tetramethylpiperidinyloxy, which is depicted in the below formula (II):



Also the use of these piperidinyloxy compounds leads to a stabilization of the composition of the present application and thus enables a long time storage possibility.

Additional stabilizers, being different from phosphonates, might be present in an amount of from 0.001% to 1 % a.i., preferably of from 0.005 % a.i. to 0.5 % a.i. Higher amounts are not necessary as an improvement of the stability can thus not be obtained. Lower amounts will not lead to an increase in stability.

The addition of respective stabilizers enables a storage stability of about 8 weeks at 40 °C. Within this storage time, the composition is still stable and the bleach activity is still sufficient for the user. Therefore, especially in war or hot climate zones, these stabilizers enable the production of cleaning compositions which might be stored for a long time.

The liquid cleaning composition of the present application preferably has a viscosity of at least 300 mPs. A respective viscosity enables a good application of the cleaning composition on surfaces to be cleaned.

In a preferred embodiment, the liquid cleaning composition of the present application further comprises at least one water-soluble salt. This salt influences the viscosity of the composition. The salt can be either inorganic or organic. In a preferred embodiment, the composition comprises at least one inorganic salt. Inorganic salts are preferably selected from the group comprising colorless water-soluble halides, sulfites, carbonates, hydrocarbonates, nitrates, nitrites, phosphates and/or oxides of alkaline metals, alkaline earth metals, aluminum and/or transition metals; further,

ammonium salts can be used. Especially preferred are halides and sulfates of alkaline metals. The inorganic salt is especially preferred selected from the group comprising sodium chloride, potassium chloride, sodium sulfate, potassium sulfate as well as combinations of those salts; especially preferred is sodium chloride.

If an organic salt is used, it is according to the present application especially preferred a colorless water-soluble salt of a carbonic acid. The salt can be of an alkaline metal, alkaline earth metal, ammonium, aluminum and/or transition metal. Preferably, the salt is selected from the group comprising formate, acetate, propionate, citrate, malate, tartrate, succinate, malonate, oxalate, lactate as well as mixtures of them.

In a preferred embodiment, the cleaning composition comprises of from 0.1 to 10 wt.-%, especially from 0.1 to 7 wt.-%, preferably from 0.2 to 5 wt.-% at least one water-soluble salt (based on 100 wt.-% of the complete cleaning composition). In an especially preferred embodiment only inorganic salt, especially sodium chloride is used.

The cleaning composition might further comprise builders such as salts of organic di- and polycarbonic acids as well as mixtures of these compounds. Water-soluble builders are preferred. Organic builders, which might be present in the cleaning composition, are for example sodium salts of polycarbonic acids. Polycarbonic acids according to the present application are such carbonic acids having more than one carboxy group. Respective carbonic acids which might be used in the composition of the present application might be citric acid, adipic acid, succinic acid, glutaric acid, malic acid, tartaric acid, maleic acid, fumaric acid, saccharic acid, nitrilotriacetic acid (NTA), methylglycinediacetic acid (MGDA), amino acids as well as mixtures of them. Preferred are salts of citric acid, adipic acid, succinic acid, glutaric acid, tartaric acid, saccharic acid as well as mixtures of them.

Building materials which might be further part of the cleaning composition of the present application might be polymeric carboxylates. These are for example alkaline metal salts of polyacrylic acid or polymethacrylic acid, e. g. with a relative molecular mass of from 600 to 750,000 g/mol. Especially polyacrylates are suitable, which preferably have a molecular mass of from 1,000 to 15,000 g/mol. Polyacrylates having a molecular weight of from 1,000 to 10,000 g/mol and especially of from 1,000 to 5,000 g/mol are preferred due to their improved water-solubility.

Further, copolymeric polycarboxylates might be used especially those of acrylic acid with methacrylic acid and acrylic acid with methacrylic acid of maleic acid. Such polymers might further

comprise allylsulfonic acids such as allyloxybenzenesulfonic acid and methallylsulfonic acid as monomer for improvement of water-solubility.

Especially preferred builders, such as citric acid or acrylic polymers have a molecular mass of from 1,000 to 5,000 g/mol in a liquid cleaning composition.

The water content of the liquid, especially aqueous composition is usually in the range of from 15 to 85 wt.-%, preferably 20 to 80 wt.-%, especially preferably 30 to 80 wt.-%. The liquid cleaning composition of the present application might further comprise one or more water-soluble organic solvents. Such organic solvents might be present in an amount of from 0.1 to 30 wt.-%, especially of from 1 to 20 wt.-%, preferably 2 to 15 wt.-%, especially preferably 3 to 12 wt.-% and further from 4 to 8 wt.-%. Amounts in wt.-% base in the present application on a total amount of 100 wt.-% for the cleaning composition. As many organic solvents are not stable in the presence of a chlorine-based bleach, the composition of the present application is preferably essentially free of organic solvents.

Additional to the above mentioned components, the cleaning composition of the present application might further comprise additives for the improvement of the drying behavior of the clean surfaces, additives to control the viscosity, UV stabilizers, perfume, colors, corrosion inhibitors, organic salts, disinfectants, enzymes, additives improving the skin quality and other common auxiliaries and additives known for the skilled person.

For the regulation of the pH value, the liquid cleaning composition of the present application can comprise common components such as acids for example mineral acids or citric acids and/or basic substances such as sodium or potassium hydroxide. The composition can further comprise buffering agents, commonly in an amount of from 0.001 to 5 wt.-%, preferably of from 0.005 to 3 wt.-%, especially of from 0.01 to 2 wt.-%, preferably of from 0.05 to 1 wt.-%, further preferably from 0.1 to 0.5 wt.-% such as 0.2 wt.-%. Preferred is sodium hydroxide. The pH value is preferably 11 or more, especially within the range of from 13 to 14.

The liquid cleaning composition of the present application might further comprise hydrotrops. Suitable hydrotrops are for example urea, butylglycol or aliphatic short-chain anionic or amphoteric solubilizers.

In a further embodiment, the present application refers to the use of a cleaning composition comprising at least one anionic surfactant and a chlorine bleach for manual cleaning of hard surfaces, especially for the manual cleaning of dishes.

In a further embodiment, the problem to be solved by the present application is method for the cleaning of hard surfaces. Here, the cleaning composition of present application might be brought into contact with the surface to be cleaned. The cleaning composition might be either put directly on the surface to be cleaned or it might be added on e.g. a cleaning sponge which is then brought into contact with the surface to be cleaned. After the cleaning, the composition and the surface respectively are rinsed with water.

Alternatively, the composition of the present application can be diluted with water. The concentration is preferably in the range of from 1 : 1 to 1 : 1,000. Afterwards, such obtained cleaning solution is brought into contact with the surface to be cleaned.

Examples:

Example 1:

A liquid cleaning composition was obtained comprising the following components:

8 % a.i.	SAS (sodium C ₁₂ -C ₁₇ sec-Alkyl sulphonate)
3.5 % a.i.	FAS (sodium C ₁₂ -C ₁₈ fatty alcohol sulfate)
3.5 % a.i.	FAES (lauryl ether sulfate (technical grade))
0.04 % a.i.	phosphonate (modified phosphonic acid sold under "Sequion CLR")
1.0 % a.i.	sodium hypochlorite
0.12 % a.i.	sodium hydroxide (added as solution)
2.0 % a.i.	sodium chloride
0.2 % a.i.	perfume
0.02 % a.i.	colorant
ad 100 %	water

The viscosity was 650 mPas, the pH 13.

The respective composition was used for a cleaning of a surface with tea soilings. These stains could be removed. Even after the storing at a temperature of 40 °C for four weeks, the hypochlorite showed an activity of 30 % compared with the initial activity.

Example 2:

The following two cleaning compositions were prepared and the bleaching activity of hypochlorite was tested after different storage times and storage temperatures. The value (%) describes the activity compared with the initial activity. Whereas composition 1 comprises SAS and FAES only, composition 2 comprises SAS, FAES and FAS as surfactants.

	Composition 1	Composition 2
NaClO	1	1
NaOH	1	1
Phosphonate	0.1	0.1
FAES	6.9	3.5
SAS	8.1	8
FAS		3.5

FAES, SAS and FAS were the same as in Example 1. Amounts are given in % a.i. As solvent, water is used to amount to 100 wt.-%.

Stability (bleach activity)		
Storage temperature / storage time	Composition 1	Composition 2
40 °C (4 w)	0.29 %	0.32 %
20 °C (4 w)	0.74 %	0.80 %
20 °C (8 w)	0.56 %	0.69 %
20 °C (12 w)	0.29 %	0.58 %
5 °C (4 w)	0.89 %	0.86 %
5 °C (8 w)	0.83 %	0.82 %
5 °C (12 w)	0.77 %	0.78 %

w = weeks

A composition of the present application can thus be stored even at elevated temperatures for a long time. The bleaching activity is in all cases sufficient.

Claims:

1. Cleaning composition for the manual cleaning of hard surfaces comprising at least one anionic surfactant and a chlorine-based bleach.
2. Cleaning composition according to claims 1, wherein the chlorine-based bleach is sodium hypochlorite.
3. Cleaning composition according to claim 1 or 2, wherein the anionic surfactant is at least one selected from the group consisting of fatty alcohol sulfate (FAS), secondary alkane sulphonate (SAS), linear alkylbenzenesulfonates (LAS) and fatty alcohol ether sulfate (FAES).
4. Cleaning composition according to any of claims 1 to 3, wherein the pH value is at least 11, in particular the pH value is in the range of from 11 to 13.
5. Cleaning composition according to any of claims 1 to 4, wherein the amount of chlorine-based bleach is in the range of from 0.5 % a.i. to 5 % a.i., especially of from 0.8 % a.i. to 2 % a.i.
6. Cleaning composition according to any of claims 3 to 5, wherein the amount of FAES is in the range of from 0.5 % a.i. to 5 % a.i., especially of from 2 % a.i. to 4 % a.i.
7. Cleaning composition according to any of claims 3 to 6, wherein the amount of FAS is in the range of from 0.5 % a.i. to 5 % a.i., especially of from 2 % a.i. to 4 % a.i.
8. Cleaning composition according to any of claims 3 to 7, wherein the amount of SAS is in the range of from 0.5 % a.i. to 10 % a.i., especially of from 3 % a.i. to 8 % a.i.
9. Cleaning composition according to any of claims 3 to 8, wherein the amount of LAS is in the range of from 0.5 % a.i. to 10 % a.i., especially of from 3 % a.i. to 8 % a.i.
10. Cleaning composition according to any of claims 1 to 9 further comprising a phosphonate, especially in an amount of from 0.01 % a.i. to 1.5 % a.i., particularly of from 0.03 % a.i. to 0.5 % a.i.
11. Use of a cleaning composition according to any of claims 1 to 10 for the manual cleaning of hard surfaces, especially for the manual cleaning of dishes.

12. Method of cleaning hard surfaces comprising the steps of providing a cleaning composition according to any of claims 1 to 10 and contacting said cleaning composition with said surface.
13. Method of cleaning hard surfaces comprising the steps of providing a cleaning composition according to any of claims 1 to 10, diluting said composition with water and bringing in contact the diluted cleaning composition with the surface to be cleaned.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/056096

A. CLASSIFICATION OF SUBJECT MATTER
INV. C11D1/37 C11D3/395 C11D11/00
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 2007/079880 A1 (HENKEL KGAA [DE]) 19 July 2007 (2007-07-19) page 1, paragraph 1 page 2, paragraph 1 - page 4, paragraph 2 claims	1-13
X	WO 95/03383 A1 (PROCTER & GAMBLE [US]) 2 February 1995 (1995-02-02) page 1, paragraph 1 page 5, paragraph 1 page 6, paragraph 4 - page 7, paragraph 1 page 7, paragraphs 5, 6 examples claims 1, 7-10	1-13



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Name and mailing address of the ISA/

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040,
Fax: (+31-70) 340-3016

Authorized officer

Bertran Nadal, Josep

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