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(54) **ACIDITY REGULATORS FOR LAUNDRY**

(57) The present invention refers to the use of an acidity regulator in a detergent or softener composition, detergent or softener compositions comprising an acidity regulator and methods of reducing residual alkalinity in a laundry textile.

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Description

[0001] The present invention refers to detergents or softeners comprising an acidity regulator.

[0002] Common detergents or softeners, which terms are herein equivalent to the terms detergent or softener compositions, or washing liquors comprising them usually have a pH value in the alkaline range. This alkalinity results in a swelling of fibers and thus a better cleaning of textiles. The disadvantage of alkalinity in the laundry is the negative effect on colors and fibers of the textiles. Further, it might cause negative reactions on the skin such as sensitizing, erythrema etc.

[0003] To reduce the alkalinity in textiles after washing, laundry is usually rinsed at least once after washing. Especially a single or reduced rinsing after a short wash-, High Sud-, or hand wash-process results in residual alkalinity in the laundry due to insufficient elution by rinsing. Measurements of pH values of textiles after single or short rinsing have shown that it is still within the range of from 8 to 9 in average.

[0004] Thus, there is a need of a reduced pH value in textiles especially after single or short rinsing. A quenching of the pH of the washing liquor itself leads to performance losses of the detergent. Thus, the need is that a pH in washing liquor itself is still highly alkaline but can be drastically reduced even by single or short rinsing after the washing step.

[0005] Surprisingly, it has been found that a detergent or softener composition having a pH value of 7.1 to 12 which comprises at least one acidity regulator enables a reduction of the pH value in textile, especially after washing and rinsing.

[0006] In a first aspect the present invention thus relates to the use of an acidity regulator in a detergent or softener composition to reduce residual alkalinity in a laundry textile especially after washing and rising, wherein the composition comprises at least one surfactant, wherein a 1 wt.-% dilution of the composition in demineralized water has a pH value of 7.1 to 12. The use is further described herein.

[0007] The acidity regulator is preferably one or more selected from the group consisting of glucono-delta-lactone, gluconic acid, sodium gluconate, potassium gluconate, calcium gluconate and mixtures thereof. Most preferably the acidity regulator is glucono-delta-lactone.

[0008] In a second aspect the present invention thus relates to the corresponding detergent or softener compositions. The detergent or softener compositions comprise at least one surfactant, and at least one acidity regulator, wherein a 1 wt.-% dilution of the composition in demineralized water has a pH value of 7.1 to 12. These compositions are further described herein.

[0009] In a third aspect the present invention relates to a method of reducing residual alkalinity in a laundry textile, especially after washing and rinsing, comprising the steps of

a) contacting the laundry textile with an aqueous solution of a composition according to the invention. Preferably the method further comprises b) washing the laundry textile and c) rinsing the laundry textile with water. These methods are further described herein.

[0010] Acidity regulators are known from foodstuff. They allow the acidity of a foodstuff set to an exact value by decreasing the pH value from alkaline to neutral or even slightly acid. They are used, for example, in milk and meat products, ice cream, desserts, confectionery, fruit products or even drinking water.

[0011] It has now been found that acidity regulators enable to reduce residual alkalinity in laundry textiles. The object of the present invention is thus solved by a detergent or softener composition comprising at least one surfactant and an acidity regulator, wherein a 1 wt.-% dilution of the composition has a pH value of 7.1 to 12. The pH value of the composition as defined herein resembles the pH value of a typical washing liquor comprising the said composition. Accordingly, the pH value refers to the pH of a washing liquor in normal use and thus characterizes not only liquid but also solid compositions.

[0012] An acidity regulator within the meaning of the present invention is a component which reacts under alkaline conditions to a product comprising an acid group, preferably a carbonic acid. The acidity regulator might be a lactone. It could also be a Brønsted's acid. If the acid is a carbonic acid, it might be protected with protecting groups, such as BOC or FMOC or other protecting groups known for the skilled artisan. The obtained acid is a mild acid so that it can neutralize the alkalinity of residual washing liquor on textiles without negative effect on the textile due to its own acidity.

[0013] Preferably, the acidity regulator is present in an amount of from 0.001 wt.-% to 30 wt.-%, preferably from 0.05 wt.-% to 25 wt.-%, especially preferred from 0.1 wt.-% to 20 wt.-% or from 0.5 wt.-% to 15 wt.-% and preferably from 1 wt.-% to 10 wt.-%. The amount is based on the total weight of the detergent or softener composition.

[0014] In a further preferred embodiment, the detergent or softener composition might additionally comprise a rinseable dye. Said dye preferably is present in an amount of from 0.0001 wt.-% to 10 wt.-%, especially from 0.001 wt.-% to 5 wt.-% or from 0.05 wt.-% to 1 wt.-%, especially preferred from 0.01 wt.-% to 0.05 wt.-%, based on the total weight of the detergent or softener composition.

[0015] The detergent or softener composition might additionally comprise citric acid and/or citric acid monohydrate. The presence of the citric acid and/or citric acid monohydrate is independent of the presence of the rinseable dye. Thus, the detergent or softener might comprise the rinseable dye and citric acid and/or citric acid monohydrate, or it might comprise only rinseable dye but no citric acid and/or citric acid monohydrate. Of course, the detergent or softener might also be free of a rinseable dye but can comprise the citric acid and/or citric acid monohydrate, which is also within the

scope of the present invention.

[0016] If the detergent or the softener composition comprises citric acid and/or citric acid monohydrate, these are present in an amount of from 0.05 wt.-% to 20 wt.-% preferably from 0.05 wt.-% to 12 wt.-%, especially from 0.1 wt.-% to 10 wt.-% and especially preferred from 0.01 wt.-% to 5 wt.-%. The amount is based on the total weight of the detergent or softener composition. If citric acid and citric acid monohydrate are present, the amount is the amount for both of them.

[0017] Surprisingly, it has been found that acidity regulators are cheap mild acid regulators. The obtained reaction products are not harmful. The acidity regulators have a slow reaction time and thus, reduce the pH value of the washing liquor not during the washing step itself but after rinsing on the wet textile during the drying phase. The initial pH value as well as the decrease of the pH value can be observed by determining the pH value of the washing liquor (1 wt.-% dilution in demineralized water) during the washing step as well as of rising water. The rinsing water was obtained directly after the washing step as well as from an additional rinse after drying the textile and rinsing it again afterwards. The pH value was determined at a temperature of 25°C with a pH-meter (Lab 850) of Schott Instruments, Germany.

[0018] Further, the initial foam profile of the detergent or softener composition is not affected by the addition of the acidity regulator. For the consumer, the foam profile is an indicator for the activity of the detergent or softener composition. Thus, a certain initial foam profile is expected. This foam profile is not reduced by the addition of the acidity regulator.

[0019] The detergent or softener composition might comprise one or more acidity regulator. Preferably it is selected from the group consisting of potassium acetate, sodium acetate, calcium acetate, sodium lactate, potassium lactate, calcium lactate, sodium citrates (i.e. monosodium citrate, disodium citrate, trisodium citrate), potassium citrates (i.e. monopotassium citrate, tripotassium citrate, calcium citrates (i.e. monocalcium citrate, dicalcium citrate, tricalcium citrate), sodium tartrates (i.e. monosodium tartrate, disodium tartate), potassium tartrates (i.e. monopotassium tartrate, dipotassium tartrate), sodium potassium tartrate, phosphoric acid, sodium malates (i.e. sodium malate, sodium hydrogen malate), potassium malate, calcium malates (i.e. calcium malate, calcium hydrogen malate), calcium tartrate, sodium adipate, potassium adipate, triammonium citrate, gluconic acid, glucono-δ-lactone, sodium gluconate, potassium gluconate, calcium gluconate and mixtures of these.

[0020] Especially preferred are gluconic acid, glucono-δ-lactone, sodium gluconate and calcium gluconate or mixtures thereof. Especially preferred is glucono-δ-lactone as acidity regulator. Glucono-δ-lactone added to a detergent or a softener is able to hydrolyze under basic condition of washing liquor to gluconic acid which afterwards reacts with alkaline components of the detergent. As the hydrolysation is very slow, the reduction of the pH value takes place mainly at the wet textiles during the drying phase and thus, pH value of the washing liquor itself is hardly influenced at all. Therefore, the performance of the detergent or softener is not reduced. As the reaction of the glucono-δ-lactone is time delayed, mild and slowly, it is especially preferred.

[0021] Further, glucono-δ-lactone is a cheap mild acid regulator, which is used in food and edible. No maximum limit is defined. Thus, negative reactions on the skin or health of humans transferred via textiles are not expected. Also its reaction products with soda or other ingredients of detergents or softeners, are not harmful at all.

[0022] The detergent or softener composition comprises the acidity regulator preferably in an amount of 0.001 wt.-% to 30 wt.-%. Fewer amounts are usually not sufficient to enable a decrease of pH value. Higher amounts of more than 30 wt.-% are not necessary to get the wanted results. Amounts of 10 wt.-% or 15 wt.-% have been shown to be sufficient for reduction of the pH value in rinsing processes.

[0023] The effect as reason to believe can be supported by addition of a rinseable dye. These rinseable dyes have a color change depending on the pH value and indicate the pH reduction for the consumer. The color will not influence the textile treated with the detergent or softener, or the skin of humans when using the detergent or softener in hand wash processes. Respective color change rinseable dyes are known as indicator for the skilled artisan. Already small amounts of 0.0001 wt.-% are sufficient to show a color change and thus give an indicator on the success of a pH change. Higher amounts will lead to more intense color change. Therefore, amounts from 0.01 wt.-% to 0.05 wt.-% are especially preferred, as here a color change is visible on the one handside. On the other hand, the color is not as intensive as there would be a fear of the consumer that textiles will keep the color after the washing process.

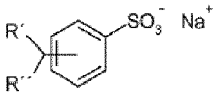
[0024] The effect of the acidity regulator can additionally be supported by pH regulators with triggered time release. For example, citric acid and/or citric acid monohydrate might be added. Preferably, they are provided within a capsule or as particles coated with coating. The coating and/or capsule will be dissolved during the end of the washing process. Thus, the pH value reduction will take place at the end of the washing process and/or during rinsing and/or on the wet textiles. The pH value of the washing liquids itself will not or only little be influenced. Additional pH regulators might be present within an amount of from 0.05 wt.-% to 20 wt.-% and preferred from 0.1 wt.-% to 5 wt.-%. It has been shown that these amounts are sufficient to additionally support the effect of the acidity regulator without affecting the pH value of the washing liquor, which still remains in the claimed range. With these amounts the performance of the detergent or softener composition is not affected, but a residual alkalinity in textile after reduced rinsing is reduced.

[0025] The detergent or softener composition comprises at least one surfactant. In case of softeners the at least one surfactant is preferably a cationic surfactant. In case of detergents the at least one surfactant is preferably an anionic surfactant. Anionic surfactants may be selected from sulfonate or sulfate type surfactants. Preferably, the anionic sur-

factant is selected from alkylbenzene sulfonate. More preferably, the alkylbenzene sulfonate is at least one linear or branched C_{6-19} preferably a linear C_{9-13}alkylbenzene sulfonate.

[0026] Surfactants of the sulfonate type are preferably C_{9-13}-alkylbenzolsulfonate, or olefinsulfonate, olefinsulfonates, i.e. mixtures of alkene and disulfonates, obtainable for example from C_{12-18} monoolefins having a terminal or internal double bond by sulfonation with gaseous sulfur trioxide subsequent alkaline or acidic hydrolysis of the sulfonation products. Suitable are further alkane sulfonates, obtainable for example by sulfochlorination or sulfoxidation with subsequent hydrolysis or neutralization of C_{12-18}-alkanes. Also suitable are esters obtained from α-sulfo fatty acids (ester sulfonates), e.g. the α-sulfonated methyl esters of hydrogenated cocos-, palm kernel- or tallow fatty acids.

[0027] Suitable alkylbenzene sulfonates are preferably selected from linear or branched alkyl benzene sulfonates of the following general formula



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in which R' and R" independent from each other are H or alkyl, and together have 6 to 19, preferably 7 to 15 and especially 9 to 13 carbon atoms. A particularly preferred representative is sodium dodecyl benzene sulfonate.

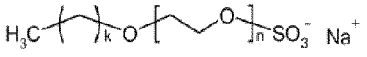
[0028] Preferred alk(en)yl sulfates are the alkali- and especially the sodium salts of sulfuric acid semiesters of C_{12}-C_{18} fatty alcohols, for example of coconut fatty alcohol, tallow fatty alcohol, lauryl, myristyl, cetyl or stearyl alcohol or of C_{10}-C_{20} oxo alcohols and those half-esters of secondary alcohols of these chain lengths. Also preferred are alk(en)yl sulfates of said chain length which contain a synthetic, petrochemical-based straight-chain alkyl radical which have analogous degradation behavior to the corresponding compounds based on oleochemical raw materials. In view of washing technology, the C_{12}-C_{16} alkyl sulfates and C_{12}-C_{15} alkyl sulfates and C_{14}-C_{15} alkyl sulfates are preferred.

[0029] The sulfuric acid monoesters of with 1 to 6 moles of ethylene oxide ethoxylated, linear or branched C_{7-21}-alcohols such as 2-methyl-branched C_{9-11} alcohols containing on average 3.5 moles of ethylene oxide (EO) or C_{12-18} fatty alcohols containing 1 to 4 EO, are also suitable. Suitable alkyl ether sulfates are for example compounds of formula A-1:

$$R^1\text{-}O\text{-}(AO)_n\text{-}SO_3^-X^+ \qquad \text{(A-1)}$$

[0030] In this formula, R^1 represents a linear or branched, substituted or unsubstituted alkyl radical, preferably a linear, unsubstituted alkyl radical, particularly preferably a fatty alcohol radical. Preferred radicals R are selected from decyl, undecyl, dodecyl, tridecyl, tetradecyl, pentadecyl, hexadecyl, heptadecyl, octadecyl, nonadecyl, eicosyl radicals and mixtures thereof, the representatives with an even number of carbon atoms are preferred. Particularly preferred radicals R^1 are derived from C_{12}-C_{18} fatty alcohols, for example of coconut fatty alcohol, tallow fatty alcohol, lauryl, myristyl, cetyl or stearyl alcohol or of C_{10}-C_{20}-oxo alcohols. AO represents an ethylene oxide (EO) or propylene oxide (PO) moiety, preferably a ethylene oxide moiety. The index n is an integer from 1 to 50, preferably from 1 to 20 and especially 2 to 10. Most preferably n represents the numbers 2, 3, 4, 5, 6, 7 or 8. X represents a monovalent cation or the n^{th} part of an n-valent cation, preference is given to the alkaline metal ions and including Na^+ or K^+, wherein Na^+ is highly preferred. Other cations X^+ may be selected from NH^{4+}, ½ Mg^{2+}, ½ Ca^{2+}, ½ Mn^{2+}, and mixtures thereof.

[0031] In various embodiments, the alkyl ether may be selected from fatty alcohol ether sulfates of the formula A-2.



(formula A-2)

with k = 11 to 19, n = 2, 3, 4, 5, 6, 7 or 8.

[0032] Particularly preferred representatives are Na-C_{12-14} fatty alcohol ether sulfates with 2 EO (k = 11-13, n = 2 in the formula A-2). The degree of alkoxylation indicated represents statistical averages which may be an integer or a fractional number for a specific product. Preferred alkoxylates/ethoxylates have a narrowed homolog distribution (narrow range ethoxylates, NRE).

[0033] For the purposes of the present invention, the term "anionic surfactants" does not comprise soaps. While detergent or softener compositions of the present invention can comprise soaps, these are not attributed to the anionic surfactants for the purposes of the present invention.

[0034] Accordingly soaps as additional components of detergents or softeners. Saturated fatty acid soaps such as the salts of lauric acid myristic acid, palmitic acid, stearic acid, hydrated erucic acid and behenic acid and in particular mixtures from natural fatty acids, for example coconut, palm kernel, or tallow fatty acids. The anionic surfactants as well

as soaps may be in the form of their sodium, potassium or ammonium salts as well as soluble salts of organic bases such as mono-, di- or triethanolamine. Preferably, the anionic surfactants and soaps are in the form of their sodium, potassium or magnesium salts, especially in the form of sodium salts.

[0035] When selecting the anionic surfactants for the formulation it is only to be considered that soaps are not included among the anionic surfactants. Preferred anionic surfactants are the alkylbenzenesulfonates and fatty alcohol sulfates, especially alkylbenzenesulfonates.

[0036] Detergents or softeners comprise preferably one or more soaps, if so the amount of soap is preferably from 0.1 wt .-% to 1 wt .-%, particularly from 0.1 wt .-% to 0.7 or 0.2 wt.-% to 0.5 wt .-%, based on the total weight of the detergent or cleaning agent.

[0037] The cationic surfactants are softeners. The cationic softener has a positive charge that attracts to the fabrics in the wash and gives the clothes a "softer" feel. Preferably, there is a sufficient amount of cationic softener present in the liquid fabric softening composition to provide noticeable softening to the user. For example, in an exemplary embodiment of the present invention, the cationic softener comprises a cationic nitrogen containing compound, such as, for example, quaternary ammonium compounds and certain alkylimidazolinium salts.

[0038] In embodiments of the present invention having quaternary ammonium compounds, the compounds are preferably those that contain at least one long chain alkyl group of 8 to 30 carbon atoms, preferably 8 to 22 carbon atoms, and, optionally, at least one lower alkyl or substituted lower alkyl group, for example, a methyl, ethyl, or 2-hydroxyethyl group. In this respect any one or more of the quaternary ammonium compounds conveniently used in fabric softeners may be used in the present invention.

[0039] Examples of quaternary ammonium compounds include, but are not limited to, ditallow dimethyl ammonium chloride; ditallow dimethyl ammonium methyl sulfate; dihexadecyl dimethyl ammonium chloride; di(hydrogenated tallow alkyl)dimethyl ammonium chloride; dioctadecyl dimethyl ammonium chloride; dieicosyl dimethyl ammonium chloride; didocosyl dimethyl ammonium chloride; di(hydrogenated tallow) dimethyl ammonium methyl sulfate; dihexadecyl diethyl ammonium chloride; di(coconut alkyl)dimethyl ammonium chloride. Ditallow dimethyl ammonium chloride and di(coconut alkyl)dimethyl ammonium methosulfate are preferred. In addition, any other quaternary ammonium compound that imparts softness may be used in the present invention.

[0040] Examples of alkylimidazolinium salts that can be used in the present invention include, but are not limited to, 1-methyl-1-(tallowylamido-)ethyl-2-tallowyl-4,5 dihydro imidazolinium methosulfate and 1-methyl-1-(palmitoylamido)ethyl-2-octadecyl-4,5-dihydroimidazolinium chloride. Other useful imidazolinium materials are 2-heptadecyl-1-methyl-1-(2-stearylamido)-ethyl-imidazolinium chloride and 2-lauryl-1-hydroxyethyl-1-oleyl-imidazolinium chloride. Also suitable herein are imidazolinium fabric softening components now known or as yet unknown in the art. In addition, any other alkylimidazolinium salt that imparts softness may be used in the present invention.

[0041] "At least one" as used herein, refers to one or more, for example 1, 2, 3, 4, 5, 6, 7, 8, 9 or more. Described in connection with components of the compositions herein this refers not to the absolute amount of molecules but to the type of ingredient. "At least one surfactant" therefore means, for example one or more different surfactants, i.e. one or more different types of surfactants. Along with quantitative data, the amounts given refer to the total amount of the corresponding designated type of constituent.

[0042] Any detergent or softener composition described herein in connection with the stated amounts relate, unless otherwise stated, on wt.-% based on the total weight of the detergent of softener composition. Furthermore, such an amount of information which refer to at least one constituent, always refer to the total amount of this type of component that is included, unless explicitly stated otherwise. This means that such amounts, for example in connection with "at least one anionic surfactant", reflect the total amount of anionic surfactants contained in the agents.

[0043] In addition to the described compounds, the detergent or softener compositions may further contain conventional ingredients of such compositions. Here are mentioned primarily other surfactants, especially nonionic surfactants, builders and bleaches, enzymes and other active ingredients. In general, the detergent or softener may contain other ingredients that enhance the performance and / or aesthetic properties of the detergent. In the present invention, the detergent or softener preferably contains in addition one or more substances from the group of enzymes, bleaches, bleach activators, chelating agents, builders, electrolytes, nonaqueous solvents, pH adjusting agents, perfumes, perfume carriers, fluorescing agents, optical brighteners, dyes , speckles, hydrotropes, silicone oils, antiredeposition agents, graying inhibitors, anti-creasing agents, color transfer inhibitors, antimicrobials, germicides, fungicides, antioxidants, preservatives, corrosion inhibitors, antistatic agents, bitter agents, ironing aids, impregnation agents, swelling and slip agents, softening components and UV -absorber. In the case where the detergent or softener as defined herein does not include soap, the compositions can comprise yet speckle. In this case, the composition only in comprises soaps in the speckles.

[0044] As a non-ionic surfactants alcohols being preferably alkoxylated, in particular ethoxilated, in particular primary alcohols having preferably 8 to 18 carbon atoms and on average 1 to 12 moles of ethylene oxide (EO) per mole of alcohol are used, in which the alcohol residue can be linear or preferably 2-position methyl-branched or respective alcohol residues may be contained as mixture, as it is usual in oxo alcohols. However, alcohol ethoxylates with linear radicals of alcohols of native origin having 12 to 18 carbon atoms, eg from coconut, palm, tallow or oleyl alcohol, and on average

2 to 8 EO per mole of alcohol are preferred. The preferred ethoxylated alcohols include C_{12-14} alcohols with 3 EO or 4 EO, C_{9-11} n-alcohol with 7 EO, C_{13-15} alcohols with 3 EO, 5 EO, 7 EO or 8 EO , C_{12-18} - alcohols with 3 EO, 5 EO or 7 EO and mixtures thereof, such as mixtures of C_{12-14}-alcohol with 3 EO and C_{12-18} alcohol with 5 EO. The stated degrees of ethoxylation are statistical averages which may be an integer or a fractional number for a specific product. Preferred alcohol ethoxylates are narrow range ethoxylates (NRE). In addition to these nonionic surfactants, fatty alcohols with more than 12 EO may also be used. Examples of these are tallow fatty alcohol with 14 EO, 25 EO, 30 EO or 40 EO.

[0045] Another class of preferred nonionic surfactants which are used either as sole nonionic surfactant or in combination with other nonionic surfactants are alkoxylated, preferably ethoxylated or ethoxylated and propoxylated fatty acid alkylicesters, preferably having from 1 to 4 carbon atoms in the alkyl chain, in particular fatty acid methyl esters.

[0046] Another class of nonionic surfactants that can advantageously be used to advantage are the alkyl polyglycosides (APG). Suitable alkyl polyglycosides satisfy the general formula $RO(G)_z$, in which R is a linear or branched, methyl-branched, in particular in the 2-position, saturated or unsaturated, aliphatic residue containing 8 to 22, preferably 12 to 18 C-atoms, and G stands for a glycose unit containing 5 or 6 carbon atoms, preferably glucose. The degree of glycosidation z is between 1.0 and 4.0, preferably between 1.0 and 2.0 and in particular between 1.1 and 1.4. Preference is given to linear alkyl polyglycosides, i.e. alkyl polyglycosider, in which the polyglycosyl is a glucose radical and the alkyl radical is an n-alkyl residue.

[0047] Nonionic surfactants of the amine oxide type, for example N-coconut alkyl-N, N-dimethylamine oxide and N-tallow alkyl-N, N-dihydroxyethyl, and the fatty acid alkeneamides may be suitable. The amount of these nonionic surfactants is preferably not more than that of the ethoxylated fat alcohols, especially not more than half of them.

[0048] Another significant group of detergent or softener composition ingredients are builders. Among this class of compounds, both organic and inorganic builders are understood. These are compounds which can both perceive a support function in the agents as well as in the application act as water-softening substance. Builders are extensively described in the prior art.

[0049] The detergent or softener composition may further comprise at least one enzyme. Preferably is one or more enzyme, in particular a protease, amylase, lipase, cellulase, hemicellulase, mannanase, pectin-splitting enzyme tannase, xylanase, xanthanase, ß-glucosidase, carrageenase, perhydrolase, oxidase, oxidoreductase and more n mixtures. Preferred hydrolytic enzymes include in particular proteases, amylases, in particular α-amylases, cellulases, lipases, hemicellulases, particularly pectinases, mannanases, ß-glucanases, and mixtures thereof. Particularly preferred are proteases, amylases and / or lipases, and mixtures thereof, and very particularly preferred are proteases. These enzymes are in principle of natural origin; starting from the natural molecules are available for use in washing - improved variants are available, which are preferably used accordingly or cleaners.

[0050] The selected enzymes can also be packaged together with accompanying substances, such as from the fermentation, or with stabilizers.

[0051] This above list ingredients is by no means exhaustive, but lists merely the most essential ingredients typical of such compositions. In particular, organic solvents can, if it is liquid, paste or gel preparations be included. Preferably, it is a mono or polyhydric alcohol having 1 to 4 carbon atoms. Preferred alcohols are ethanol, 1, 2-propanediol, glycerol and mixtures of these alcohols. In preferred embodiments, the composition comprises 2 to 12 wt.-% of such alcohols.

[0052] In a further embodiment, the problem to be solved by the present invention is a method for the cleaning of textiles. Here, the detergent or a softener of the present invention might be brought into contact with the textiles to be cleaned. The detergent or softener composition might be put directly on the textile to be cleaned or it might be put into water to obtain washing liquor into which the textiles are then put into. After the cleaning, the textiles are rinsed with water.

[0053] In a further embodiment, the detergent or softener might be a liquid detergent or softener composition. It can also be a hard, powdered detergent or it might be in a form of tablets. If the detergent or softener composition is a solid, it might be in the form of tablets. It the detergent or softener composition is a liquid, it might be in the form of a gel and might be provided to the consumer in respective caps.

[0054] Powdered detergents might be encapsulated within a foil. It would be also possible that a respective foil, especially a water-disintegrable foil, comprises an acidity regulator, preferably glucono-delta-lactone. This is specifically advantageous if the powdered detergent comprises highly alkaline and bleach ingredients. The acidity regulator thus has the dual function of stabilizing the foil, especially the water-disintegrable foil, and reducing the pH on the textile. In this manner the supplied detergent composition becomes more effective. In this context a unit dose solid detergent composition is disclosed wherein the unit dose comprises one or more water-disintegrable foils which form a container comprising the solid detergent composition and wherein the one or more foil comprise the acidity regulator, preferably glucono-delta-lactone. In one embodiment the one or more water-disintegrable foils are polyvinylalcohol- and/or polyvinylalcohol-copolymer foils.

[0055] An acidity regulator might also be used in a laundry shade, wherein the acidity regulator is applied on a stripe or forced application on carrier textile. Also here, glucono-delta-lactone is the preferred acidity regulator.

[0056] The detergent or softener might be for machine washing or manual washing. Preferably it is for manual washing of textiles.

[0057] In a further embodiment the present invention refers to the use of acidity regulators in a detergent or softener composition with a pH value of 7.1 to 12 to reduce residual alkalinity after washing and rising. In preferred embodiments, the detergent or softener composition comprising acidity regulator is a detergent or softener composition according to the present invention.

[0058] Hence any disclosure relating to a detergent or softener composition according to the present invention is applied to the use and method according the present invention and vice versa.

Example

[0059] A powdered detergent according to the present invention with the following components in wt.-% was prepared:

Component	wt.-%
C_{12-18}-fatty alcohol with 7 EO	1 to 5
C_{12-18}-fatty alcohol sulfate with 7 EO, sodium salt	1 to 5
Linear alkylbenzol sulfonate, sodium salt	7 to 12
Sodium carbonate	15 to 25
Sodium hydrogen carbonate	4 to 8
Sodium disilicate	3 to 5
Sodium percarbonate	12 to 19
TAED	3 to 6
Polyacrylates, sodium salt	2 to 4
Carboxymethylcellulose	0,5 to 1,5
Sodium phosphonate	0,5 to 1,5
Sodium sulfate	20 to 30
Mix of enzymes	0,1 to 1,5
Perfume	0,1 to 0,5
Glucono-δ-lacton	1 to 10

Claims

1. Use of an acidity regulator in a detergent or softener composition to reduce residual alkalinity in a laundry textile especially after washing and rising, wherein the composition comprises at least one surfactant, wherein a 1 wt.-% dilution of the composition in demineralized water has a pH value of 7.1 to 12, and wherein the acidity regulator is preferably one or more selected from the group consisting of glucono-delta-lactone, gluconic acid, sodium gluconate, potassium gluconate, calcium gluconate and mixtures thereof, more preferably the acidic regulator is glucono-delta-lactone.

2. Detergent or softener composition comprising at least one surfactant, and at least one acidity regulator, wherein a 1 wt.-% dilution of the composition in demineralized water has a pH value of 7.1 to 12.

3. Detergent or softener composition according to claim 2, comprising the acidity regulator in an amount of from 0.001 wt.-% to 30 wt.-%, preferably from 1 wt.-% to 10 wt.-%, based on the total weight of the detergent or softener composition.

4. Detergent or softener composition according to claim 2 or 3, further comprising a rinseable dye, preferably in an amount of from 0.0001 wt.-% to 10 wt.-%, preferably from 0.01 wt.-% to 0.05 wt.-%, based on the total weight of the detergent or softener composition.

5. Detergent or softener composition according to any of claims 2 to 4, further comprising citric acid and/or citric acid

monohydrate, preferably in an amount of from 0.05 wt.-% to 20 wt.-%, especially preferred from 0.1 wt.-% to 5 wt.-%, based on the total weight of the detergent or softener composition.

6. Detergent or softener composition according to claim 5, wherein the citric acid and/or citric acid monohydrate is provided within a capsule or with a coating to able a triggered time release.

7. Detergent or softener composition according to any of claims 2 to 6, wherein the acidity regulator is one or more selected from the group consisting of glucono-delta-lactone, gluconic acid, sodium gluconate, potassium gluconate, calcium gluconate, potassium acetate, sodium acetate, calcium acetate, sodium lactate, potassium lactate, calcium lactate, sodium citrates, potassium citrates, calcium citrates, sodium tartrates, potassium tartrates, sodium potassium tartrate, phosphoric acid, sodium malates, potassium malate, calcium malates, calcium tartrate, sodium adipate, potassium adipate, triammonium citrate and mixtures thereof.

8. Detergent or softener composition according to any of claims 2 to 7, wherein the acidity regulator is one or more selected from glucono-delta-lactone, gluconic acid, sodium gluconate, potassium gluconate, calcium gluconate and mixtures thereof, preferably glucono-delta-lactone.

9. Softener composition according to any of claims 2 to 8, wherein the at least one surfactant comprises a cationic surfactant.

10. Detergent composition according to any of claims 2 to 8, wherein the at least one surfactant comprises an anionic surfactant.

11. Method of reducing residual alkalinity in a laundry textile, especially after washing and rinsing, comprising the steps of

a) contacting the laundry textile with an aqueous solution of a composition according to any of claims 2 to 10, optionally
b) washing the laundry textile and
c) rinsing the laundry textile with water.

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EUROPEAN SEARCH REPORT

Application Number
EP 17 16 6279

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