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(54) **DETERGENT COMPOSITION FOR TEXTILES WHICH ARE SOILED WITH CATIONIC SURFACTANTS**

WASCHMITTEL FÜR MIT KATIONISCHEN TENSIDEN BESCHMUTZTEN TEXTILIEN

COMPOSITION DETERGENTE POUR TEXTILES SOUILLES PAR DES SURFACTANTS CATIONIQUES

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Description

[0001] The present invention relates to method of washing laundry containing one or more cationic surfactants with a detergent composition.

[0002] In the field of the disinfectant cleaning of hard surfaces the cleaning agents used for this purpose often contain cationic surfactants. Those cationic surfactants have the advantage that they can function as biocidal disinfectants and also show cleaning properties even if the cleaning properties are not marked. Typically, after the cleaning the cleaning materials used for the disinfectant cleaning of hard surfaces like mops, flat mop heads or cloths are contaminated with the soil which was supposed to be removed by the cleaning and also with ingredients of the surfactants used which remain on or within the fabric in different amounts after usage.

[0003] To reduce costs and to protect the environment it is common to use each cleaning material several times and not to throw it away after one application. This requires a thorough cleaning of the cleaning materials after each application. However, the contamination of the cleaning materials with the cationic surfactants results in high demands on the washing compositions used for washing those cleaning materials. Such washing compositions of course should be able to remove the soil still contained in the fiber after the cleaning process. Moreover, the detergents used in such washing compositions must not interact with the detergents of the cleaning composition which also may be contained in or on the fabric.

[0004] It is known that the soil which remains on the fabric because it could not be removed by the washing detergent, as well as the interaction products of the ingredients of the washing compositions and the cleaning compositions lead to an increased attrition and to a decreased life span of the cleaning materials. Moreover, the substances adhered to the fabrics or contained within the fabric deteriorate the optical appearance of those cleaning materials and induces an unhygienic impression, even after only a few applications and washing cycles.

[0005] The above interaction products may, for example, result from a reaction of the cationic surfactants used in the cleaning process and still contaminating the cleaning materials and the anionic surfactants contained in the common detergents used for washing the cleaning materials. Thereby, so called electroneutral salts are formed which can deposit on or within the cleaning materials. Such deposited incrustations may destruct the fabric, decrease the absorbency of the cleaning textile in further cleaning processes and also increase the graying of the fabric due to the inclusion of pigments therein or the adhesion of pigments thereon.

[0006] According to the art, at least the problems with regard to the formation of interaction products depositing on or within the fabric are expected to be overcome by including a pre-rinsing step before starting the actual washing process. However, as it is known that cationic surfactants have a strong tendency to adhere to fabrics making them useful as cationic textile auxiliaries and fiber finishing agents a thorough rinsing is required to remove the cationic surfactants from the fabrics. Such a procedure is not attractive considering the general tendency to save resources, energy and costs.

[0007] EP 0 913 117 A1 deals with problems of the interaction of the washing solution and the cleaning solution. Said document solves this problem by using a washing solution having the same composition as the cleaning solution. Thus, according to the teaching disclosed therein the cleaning materials are impregnated with a cleaning solution which basically has the same composition as the washing solution, directly after having completed the washing process to provide ready-to-use cleaning materials already containing a cleaning solution.

[0008] EP 0 913 117 A1 also mentions that it may be possible not to use any additional washing detergent at all as the cleaning material still comprises enough washing/cleaning agents which can be used. However, depending on the duration of the cleaning procedure and the degree of soiling of the surface to be cleaned the amount of the remaining washing/cleaning detergent on the cleaning material probably will differ such that without any additional detergent added during the washing procedure the required amount of washing detergent to remove the soil from the cleaning materials may not be present. Consequently, using a washing composition which does not contain any additional detergent does not guarantee a constantly good washing performance.

[0009] However, in case the cleaning solution does not exhibit the appropriate washing properties and the cleaning solution is adapted to a specific application for which washing solutions are not appropriate, the above method is not suitable. This is, for example, the case when cationic surfactants are used as a main detergent in the cleaning solution as those surfactants typically show comparatively poor washing properties.

[0010] EP 1 181 345 A1 also mentions the negative effects in connection with the mechanical attrition of the cleaning materials due to incrusted soiling in the cleaning materials. Therein, the life span of the cleaning materials is prolonged and the destruction of the materials caused by attrition is reduced by using complexing agents. However, this will not be helpful when considering incrustations caused by an interaction of a cationic surfactant with other components of washing compositions like anionic surfactants.

[0011] Thus, the problem underlying the present invention is to provide a method for washing laundry, and especially textiles, used for a disinfectant cleaning, which laundry contains at least one cationic surfactant in the fabric.

[0012] The above problem is solved by a method of washing laundry comprising the treatment of laundry containing at least one cationic surfactant with an aqueous solution or dispersion of a detergent composition containing at least one cationic surfactant which composition comprises one or more nonionic surfactants in an amount of from above 0

wt.% and up to 10 wt.% of the total composition and which is free of any anionic surfactant.

[0013] The inventors of the present invention have found out that surprisingly cleaning articles which are contaminated with cationic surfactants because of their use for disinfectant cleaning still contain cationic surfactants in their fabric even after extremely thorough rinsing with water. This especially refers to fabrics with a high content of cellulose. The inventors of the present invention also noticed that the tendency of cationic surfactants to attach to fabrics is so strong that even fabrics which themselves were not contaminated with cationic surfactants before being put in the washing device but which are washed in the same washing process as the contaminated fabric are also contaminated with the cationic surfactants after the washing process. This means that by getting into contact with the washing solution containing the cationic surfactants removed from the fabrics beforehand the fabrics become contaminated therewith. Thus, the presence of cationic surfactants either in the washing liquor or on the fabric in addition to the presence of anionic surfactants in the washing process may lead to incrustations on or within the textiles which comprise neutral salts of the cationic and the anionic surfactants.

[0014] However, a washing detergent which is completely free of any anionic surfactants can prevent the formation of incrustations formed by the interaction of cationic and anionic surfactants on or within the fabric which was formerly contaminated with cationic surfactants.

[0015] The amount of nonionic surfactant contained in the washing detergent can be reduced due to the presence of cationic surfactants in the cleaning article. Even though the cationic surfactants do not represent the typical ingredients in washing compositions because of their reduced washing performance their presence at least is sufficient to reduce the amount of nonionic surfactants required to obtain good washing results. However, the presence of nonionic surfactants in the washing detergent is necessary to make sure that also cleaning articles which only comprise small amounts of cationic surfactants for example because of the kind of application will be sufficiently cleaned. Moreover, even if there is a higher amount of cationic surfactant in the washing liquor, the additional nonionic surfactant is required as the soiling within the fabric typically will not be removed sufficiently only by the cationic surfactants.

[0016] Although it is preferred to use only one nonionic surfactant, it is also possible to use a mixture of two or more different nonionic surfactants. Preferably, the total amount of nonionic surfactants present in the detergent compositions ranges from 2 - 8 wt.-%, more preferred from 4 - 6 % wt.-%.

[0017] The kind of nonionic surfactant used in the present detergent composition is not specifically limited. However, especially in case the cleaning composition beside the cationic surfactant also contains nonionic surfactants which are also contained in the fabric or in case the cleaning materials are highly contaminated with cationic surfactants it is preferred to use one or more low foaming nonionic surfactants. These can be exemplified by ethoxylated and/or propoxylated C_{10} - C_{18} fatty alcohols containing from 1 to 8 ethylene oxide moieties and from 0 to 8, preferably from 0 to 4, propylene oxide moieties in the molecule. Preferably, the fatty alcohol moiety comprises 12 to 16 carbon atoms, and more preferred 12 to 14 carbon atoms. The number of ethylene oxide units in the fatty alcohol preferably ranges from 2 to 6, and more preferred is 5.

[0018] It is also possible to use other nonionic surfactants which are generally known as low foaming like ethoxylated and butoxylated or only butoxylated C_{12} - C_{18} fatty alcohols containing from 1 to 8 ethylene oxide moieties and from 1 to 8 butylene oxide moieties or only from 1 to 8 butylene oxide moieties in the molecule as well as other mixed alkyl poly (alkylene glycol) ethers the termination of which may additionally be capped.

[0019] It is preferred that the detergent composition comprises one or more complexing agents in a total amount of from 0,2 to 15 wt.-% of the total composition, preferably from 0,5 - 10 wt.-%, most preferred from 0,8 to 2 wt.-%. In case any kind of phosphate is present in the detergent composition it will not be considered to be a complexing agent in the present specification but a builder. Complexing agents appropriate for the use in method of the present invention can be exemplified by nitrilotriacetic acid and ethylenediaminetetraacetic acid.

[0020] Further appropriate complexing agents are methylglycine diactetate, and alkali salts of phosphonic acids, like 1-hydroxyethane-1,1-diphosphonate, diethylenetriaminepentamethylene phosphonate or ethylenediaminetetramethylene phosphonate.

[0021] Further complexing agents can be represented by hydroxycarboxylic acids like monohydroxysuccinic acid, dihydroxysuccinic acid, alpha-hydroxypropionic acid, citric acid, gluconic acid as well as their salts, especially their alkali salts, and mixtures thereof. Citrate is preferably used in form of trisodiumcitrate dihydrate.

[0022] The presence of those complexing agents is preferably advantageous to reduce the formation of other incrustations on or within the cleaning fabrics than the neutral salts composed of anionic and cationic surfactants.

[0023] The detergent composition may additionally comprise one or more other additives which are typically used in washing detergents like graying inhibitors, alkaline sources, bleaching agents, bleaching agent activators, builders, defoamers and optical brighteners. Although biocidal agents may also be added because of the biocidal effect of the cationic surfactants which are present in the washing solutions, in most cases this will not be necessary.

[0024] Graying inhibitors should be present in an amount of from 0,1 - 5 wt.-% of the total composition, preferably of from 0.5 to 3 wt.-%. The object of the graying inhibitors is to keep the soiling removed from the fabric and suspended in the liquor and to prevent its re-deposition. Appropriate graying inhibitors can be exemplified by water soluble salts of

polymeric carboxylic acids, glue, gelatin, salts of ether carboxylic acids of starch or cellulose, salts of ether sulfuric acids of starch or cellulose or acidic sulfuric acid ester salts of cellulose or starch. Polyamides containing water soluble acidic groups are also appropriate for this purpose. Soluble starch products as well as starch products other than the above mentioned may also be used like decomposed starch, aldehyde starches etc. Polyvinyl pyrrolidone is also suitable. However, it is preferred to use cellulose ethers like carboxymethylcellulose, especially in form of its sodium salt, methylcellulose, hydroxylalkylcellulose and mixed ethers like methylhydroxyethylcellulose, methylhydroxypropylcellulose, methylcarboxymethylcellulose and mixtures thereof.

[0025] As builder contained in the detergent composition any substance known in the art in the broadest sense as an appropriate builder for washing and cleaning detergents may be used as well as mixtures thereof. This also includes coated builders which even are preferred in case chlorine containing bleaching agents are present. Appropriate builders also can be complexing agents like the ones mentioned above. Beside the former mentioned complexing agents which may function as builders compounds like soda and borax are appropriate. Alkali phosphates which may be present in form of their sodium or potassium salts like tetrasodium diphosphate, pentasodium triphosphate, sodium hexametaphosphate and the corresponding potassium salts as well as mixtures thereof may also be used as builder in the present detergent composition.

[0026] Further water soluble builder components can be exemplified by native or synthetic organic polymers, in particular, polycarboxylates. For example, polyacrylic acid, copolymers of maleic anhydride and acrylic acid as well as their sodium salts may be used. Commercial products thereof, for example, represent Sokalan® CP 5 and PA 30 from BASF, Alcosperse® 175 and 177 from Alco, LMW® 45 N and SPO2 ND from Norsohaas, Acusol 497 NG from Rohm & Haas. Appropriate native polymers can be exemplified by oxidized starch (for example as disclosed in DE 42 28 786) and polyamino acids like polyglutamic acid or polyaspartic acid, for example from Cygnus, Bayer, Rohm & Haas, Rhodia or SRCHEM.

[0027] Further appropriate builders represent amorphous metasilicates or layer silicates. Crystalline layer silicates may also be used in case they are sufficiently stable against alkalis. Appropriate crystalline layer silicates are commercially available from Clariant, Germany under the tradename "sodium-SKS", like sodium SKS-1 ($Na_2Si_{22}O_{45} \cdot x\ H_2O$, Kenyait), Na-SKS-2 ($Na_2Si_{14}O_{29} \cdot x\ H_2O$, Magadiit), Na-SKS-3 ($Na_2Si_8O_{17} \cdot x\ H_2O$), Na-SKS-4 ($Na_2Si_4O_9 \cdot x\ H_2O$, Makatit), Na-SKS-5 ($\alpha$-$Na_2Si_2O_5$), Na-SKS-7 ($\beta$-$Na_2Si_2O_5$, Natrosilit), Na-SKS-11 (τ-$Na_2Si_2O_5$) und Na-SKS-6 (δ-$Na_2Si_2O_s$).

[0028] Builders can be present in a total amount of from 20 - 80 wt.% of the total composition, preferably from 25 - 50 wt.-%.

[0029] Appropriate bleaching agents for the use in the method of the present invention represent, for example, sodium perborate, also in form of its hydrate, or sodium percarbonate, as well as bleaching agents on the basis of chlorine, like N-chloro-p-toluolsulphonic amide, trichloroisocyanuric acid, alkali dichloroisocyanurate, alkali hypochlorite and alkali hypochlorite releasing agents or mixtures thereof, with bleaching agent compositions which are stable against alkali being especially preferred. Concerning the stability against alkalis, the substances themselves can exhibit this stability or components may be stabilized by appropriate methods like surface coating or surface passivation. Bleaching agents are preferably contained in an amount of from 5 - 30 wt.% of the total composition, more preferred from 10 - 20 wt.-%.

[0030] The detergent composition may also additionally contain one or more bleaching agent activators. This enables the washing temperature to be reduced to lower temperatures, for example to washing temperatures in the range of from 40 to 70 °C, in comparison with using bleaching agents without activators. Appropriate bleaching agent activators are exemplified by tetraacetyl ethylenediamine (TAED), tetraacetyl glycolurile (TAGU), nobs, isonobs as well as mixtures thereof. Bleaching agent activators are preferably contained in the composition in a total amount of from 0,5 to 10 wt.% based on the total composition, more preferred from 2 to 5 wt.%.

[0031] In case the presence of optical brighteners is desired, for example salts of 4,4'-bis(2-anilono-4-morpholino-1,3,5-triazine-6-amino)stilbene-2,2'-disulphonic acid or similar compounds which contain a diethanolamine group, a methylamine group, an aniline group or a 2-methoxyethylamine group instead of a morpholino group may be used. Further suitable optical brighteners are of the substituted diphenylstyryl type like alkali salts of 4,4'-bis(2-sulfostyryl) diphenyl, 4,4'-bis(4-chloro-3-sulfostryryl)diphenyl or 4-(4-chlorostyryl)-4'-(2-sulfostryryl)diphenyl. Mixtures of any of those compounds may also be applied. Optical brighteners are preferably contained in the detergent composition in a total amount of from 0.1 - 10 wt.% based on the total composition, more preferred from 0.5 - 5 wt.-%.

[0032] Although the consistency of the present detergent composition is not especially limited and the composition may exhibit for example a liquid or a paste-like consistency, it is preferably of a solid consistency and more preferred represents a powder. Further generally known- forms of solid application are also possible, like tablets or solid cast blocks. Therefore, the composition preferably contains less than 15 wt.-% water, more preferred less than 10 wt.-% water and in the most advantageous case is free of any water.

[0033] It is preferred that the aqueous solution or dispersion contains the detergent composition in a concentration of from 3 - 10 g/l based on the total solution or dispersion, more preferred from 4 - 7 g/l. Typically the method is carried out using a washing medium at temperatures of from 30 - 90 °C, preferably of from 40 - 70 °C and the washing process preferably is complemented by a mechanical treatment.

[0034] In a preferred embodiment the laundry is not rinsed before the washing process or the pre-washing process without addition of detergent. As the inventors of the present invention found out that even thorough rinsing of fabrics contaminated with cationic surfactants does not remove the cationic surfactants completely, rinsing before the washing or pre-washing process does not prevent the formation of incrustations in form of neutral salts of anionic and cationic surfactants in case the washing detergent contains anionic surfactants. However, according to the present invention the detergent composition does not comprise any anionic surfactants. Thus, it is not necessary to pre-wash or pre-rinse the contaminated fabric before the actual washing step.

[0035] This allows to reduce the amount of water required to clean the laundry and, accordingly, saves resources and energy. It also leads to a low attrition of the laundry as spin-drying which additionally stresses the laundry is avoided.

[0036] Moreover, as cationic surfactants are known for not showing marked washing properties when no further detergent is added, the pre-rinse or pre-washing will not be very efficient. However, a combination of the cationic surfactant of the cleaning fabric and the nonionic surfactant used in the washing composition allows to reduce the amount of nonionic surfactants and at the same time supplies a good washing performance.

[0037] It is also advantageous not to remove the cationic surfactant from the used cleaning fabric in a pre-washing or pre-rinsing step but only in the main washing step, as the cationic surfactant exhibits biocidal properties and, thus, the addition of further biocidal agents can be avoided.

[0038] The laundry which preferably can be washed according to the present inventive method typically comprises textiles which are used for cleaning surfaces. Such cleaning textiles can be made of natural materials, man made materials or mixtures thereof. The best effect regarding the reduction of incrustations caused by neutral salts of anionic and cationic surfactants can be seen if materials are used having a comparatively high negative surface charge inducing high chemisorptions which is the case for example with cotton materials.

[0039] Examples for cleaning textiles which are often contaminated with cationic surfactants include mops, cloths and fabrics.

[0040] As such cleaning materials are typically used in the field of commercial cleaning, it is preferred that those materials are collected and washed separately, preferably in commercial laundries.

[0041] The detergent composition and the method of the present invention show a number of advantages:

[0042] The absence of any anionic surfactant allows to avoid the formation of incrustations comprising neutral salts of anionic and cationic surfactants. This has economical as well as ecological effects since, for example, a pre-rinsing or pre-washing step can be avoided and the life span as well as the optical appearance of the cleaning materials is increased. Moreover, the amount of nonionic detergent required to achieve a good cleaning performance can be reduced. Moreover, the textile absorption can be dramatically increased as the required space in the fabric is not occupied by the incrustations. In addition, a reduced graying of the fabric occurs because the inclusion of pigments within the incrustations or the adhesion of the pigments to the incrustations is diminished.

[0043] The present invention will be further elucidated by the following examples. If not otherwise stated, % refers to wt.-%.

Examples

[0044] The following washing tests were carried out with the following washing compositions:

Table 1

Ingredient	**A (%)**	**B (Comparative) (%)**
hydroxyethanediphosphonate (sodium salt)	1,0	0,3
acrylic acid/maleic acid copolymer	5,0	3,5
carboxymethylcellulose	1,0	-
mixture of paraffin/silicon oil 7:3 (10 %) on soda	-	2,0
sodiumperborate monohydrate	12,0	12,0
TAED[1])	3,0	3,1
soda	30,0	10,5
sodium zeolith	28,0	25,0
anionic surfactant (ABS[2]))	-	8,0

(continued)

Ingredient	A (%)	B (Comparative) (%)
non-ionic surfactant ($C_{12}/_{14}$ FA+5EO[3])	6,0	4,0
optical brightener	-	0,1
protease	-	0,2
defoamer	0,2	-
water	5	5
remaining Na_2SO_4 to 100 %	8,8	26,3
Total	100,0	100,0
[1]) tetraacetyl ethylenediamine [2]) alkylbenzenesulfonate [3]) FA = fatty acid, EO = ethylene oxide unit		

[0045] Compositions A and B, according to table 1, were used for washing mops. Two different kinds of mop materials were used:

RTX 5 S = 50 % cotton + 50 % polyester

RCT 5 P = 20 % cotton + 60 % polyester + 20 % micro fiber with > 1DETX.

Conditions:

[0046] Group (a): mops were pre-soaked for 22 hours in an aqueous 2 % Incidin plus (cationic surfactant having a quaternary ammonium group) solution.

[0047] Group (b): In the control group the mops were not pre-soaked.

[0048] In each one of the four washing tests 12 mops of each group were washed together. Each mop was subjected to 25 cycles depending on the group either including pre-soaking and washing or only washing. One washing cycle took 20 minutes and was carried out at a temperature of 60 °C. Compositions A and B were used as detergents in form of an aqueous solution formed during the washing process in a concentration of 5 g/l.

[0049] In one washing test 12 mops of the first mop material which belong to group (a) and 12 mops of the same material which belong to group (b) were washed together with the solution of composition A in the above concentration. In another example another 24 mops were washed with a solution of composition B. The same tests were carried out using mops of the second mop material.

[0050] Before the treatment the mops they were weighed. The amount of incrustation deposited on or within the mops was determined by weighing them again after 25 cycles of treatment. The following weights were obtained:

Table 2

	RTX 5 S	Incrustation	RCT 5 P	Incrustation
Weight of the new textile	234 g		158	
A:				
25 cycles pre-soaked/washed	233 g	-	158	-
25 cycles not soaked/washed	231 g	-	157	-
B:				
25 cycles pre-soaked/washed	373 g	59 %	200	27 %
25 cycles not pre-soaked/washed	307 g	31 %	186	18 %

[0051] These test results demonstrate the superior performance of composition A which does not generate any incrustation on both types of mops. The common washing composition B leads to severe incrustations of nearly 60 % on mops with a high cotton distribution and 27 % on the mops with a lower cotton distribution of 20%.

[0052] These data also show the high substantivity of cationic surfactants. Even the mops functioning as a control group and which were not pre-soaked show an increase of weight indicating the generation of incrustations. It is assumed that the incrustations are formed when washing those mops with the common detergent B containing an anionic surfactant because of a reaction with the cationic surfactants which are removed during the washing process from the pre-soaked mops and are deposited onto the not pre-soaked mops. Thus, mops which are not contaminated with cationic surfactants before the washing process show incrustations after a washing process in which anionic surfactants are used.

Claims

1. Method of washing laundry comprising the treatment of laundry containing at least one cationic surfactant with an aqueous solution or dispersion of a detergent composition which composition comprises one or more nonionic surfactants in an amount of from above 0 wt.% and up to 10 wt.% of the total composition and which is free of any anionic surfactant.

2. Method according to claim 1 **characterized in that** the composition comprises the nonionic surfactant in an amount of from 4 to 8 wt.%.

3. Method according to claims 1 or 2 **characterized in that** the one or more nonionic surfactants are low foaming nonionic surfactants.

4. Method according to any of claims 1 to 3 **characterized in that** the detergent composition additionally comprises one or more complexing agents in an amount of from 0,2 to 15 wt.% of the total composition.

5. Method according to any of claims 1 to 4 **characterized in that** the detergent composition additionally comprises one or more components selected from the group comprising graying inhibitors, alkaline sources, bleaching agents, bleaching agent activators, builders, defoamers and optical brighteners .

6. Method according to any of claims 1 to 5 **characterized in that** the detergent composition has a solid consistency.

7. Method according to any of claims 1 to 6 **characterized in that** the aqueous solution or dispersion contains the detergent composition in a concentration of from 3 to 10 g/l based on the total solution or dispersion.

8. Method according to any of claims 1 to 7 **characterized in that** the laundry comprises cleaning textiles.

9. Method according to claim 8 **characterized in that** the cleaning textiles comprise natural materials, man-made materials or mixtures thereof.

10. Method according to any of claims 1 to 9 **characterized in that** the laundry comprises mops, cloths and fabrics.

11. Method according to any of claims 1 to 10 **characterized in that** the treatment of the laundry proceeds at a temperature of from 30 to 90°C, preferably of from 40 to 70°C.

12. Method according to any of claims 1 to 11. **characterized in that** it is applied in commercial laundries.

Patentansprüche

1. Ein Verfahren zum Waschen von Wäsche umfassend die Behandlung der Wäsche, beinhaltend wenigstens ein kationisches Tensid mit einer wässrigen Lösung oder Dispersion einer Waschmittelzusammensetzung, welche Zusammensetzung ein oder mehrere nichtionische Tenside in einem Anteil von mehr als 0 Gew.-% und bis zu 10 Gew.-%, bezogen auf die gesamte Zusammensetzung, umfasst und welche frei von jeglichen anionischen Tensiden ist.

2. Ein Verfahren gemäß Anspruch 1, **dadurch gekennzeichnet, dass** die Zusammensetzung das nichtionische Tensid

in einem Anteil von 4 bis 8 Gew.-% umfasst.

3. Ein Verfahren gemäß den Ansprüchen 1 oder 2, **dadurch gekennzeichnet, dass** das eine oder die mehreren nichtionischen Tenside schaumarme nichtionische Tenside sind.

4. Ein Verfahren gemäß irgendeinem der Ansprüche 1 bis 3, **dadurch gekennzeichnet, dass** die Waschmittelzusammensetzung zusätzlich ein oder mehrere Komplexbildner in einem Anteil von 0,2 bis 15 Gew.-%, bezogen auf die gesamte Zusammensetzung, umfasst.

5. Ein Verfahren gemäß irgendeinem der Ansprüche 1 bis 4, **dadurch gekennzeichnet, dass** die Waschmittelzusammensetzung zusätzlich einen oder mehrere Bestandteile umfasst, ausgewählt aus der Gruppe umfassend Vergrauungsinhibitoren, Alkalinitätsquellen, Bleichmittel, Bleichmittelaktivatoren, Builder, Entschäumer und optische Aufheller.

6. Ein Verfahren gemäß irgendeinem der Ansprüche 1 bis 5, **dadurch gekennzeichnet, dass** die Waschmittelzusammensetzung eine feste Konsistenz besitzt.

7. Ein Verfahren gemäß irgendeinem der Ansprüche 1 bis 6, **dadurch gekennzeichnet, dass** die wässrige Lösung oder Dispersion die Waschmittelzusammensetzung in einer Konzentration von 3 bis 10 g/l enthält, basierend auf der gesamten Lösung oder Dispersion.

8. Ein Verfahren gemäß irgendeinem der Ansprüche 1 bis 7, **dadurch gekennzeichnet, dass** die Wäsche Reinigungstextilien umfasst.

9. Ein Verfahren gemäß Anspruch 8, **dadurch gekennzeichnet, dass** die Reinigungstextilien natürliche Materialien, synthetische Materialien oder Gemische derselben umfasst.

10. Ein Verfahren gemäß irgendeinem der Ansprüche 1 bis 9, **dadurch gekennzeichnet, dass** die Wäsche Mops, Lappen/Tücher und Stoffe/Gewebe umfasst.

11. Ein Verfahren gemäß irgendeinem der Ansprüche 1 bis 10, **dadurch gekennzeichnet, dass** die Behandlung der Wäsche bei einer Temperatur von 30 bis 90°C, bevorzugt von 40 bis 70°C durchgeführt wird.

12. Ein Verfahren gemäß irgendeinem der Ansprüche 1 bis 11, **dadurch gekennzeichnet, dass** es in gewerblichen Wäschereien angewandt wird.

Revendications

1. Procédé de lavage du linge, comprenant le traitement du linge contenant au moins un tensioactif cationique avec une solution ou dispersion aqueuse d'une composition détergente, laquelle composition comprend un ou plusieurs tensioactifs non-ioniques en une quantité supérieure à 0 % en poids et allant jusqu'à 10 % en poids de la composition totale et qui est exempte de tout tensioactif anionique.

2. Procédé selon la revendication 1, **caractérisé en ce que** la composition comprend le tensioactif non-ionique en une quantité de 4 à 8 % en poids.

3. Procédé selon la revendication 1 ou 2, **caractérisé en ce que** le ou les tensioactifs non-ioniques sont des tensioactifs non-ioniques à faible pouvoir moussant.

4. Procédé selon l'une quelconque des revendications 1 à 3, **caractérisé en ce que** la composition détergente comprend de plus un ou plusieurs agents complexants en une quantité de 0,2 à 15 % en poids de la composition totale.

5. Procédé selon l'une quelconque des revendications 1 à 4, **caractérisé en ce que** la composition détergente comprend de plus un ou plusieurs composants choisis dans le groupe comprenant les inhibiteurs de grisonnement, les sources alcalines, les agents de blanchiments, les activateurs d'agent de blanchiment, les adjuvants, les anti-moussants et les azurants optiques.

6. Procédé selon l'une quelconque des revendications 1 à 5, **caractérisé en ce que** la composition détergente a une consistance solide.

7. Procédé selon l'une quelconque des revendications 1 à 6, **caractérisé en ce que** la solution ou dispersion aqueuse contient la composition détergente à une concentration de 3 à 10 g/l par rapport à la solution ou dispersion totale.

8. Procédé selon l'une quelconque des revendications 1 à 7, **caractérisé en ce que** le linge comprend des textiles à nettoyer.

9. Procédé selon la revendication 8, **caractérisé en ce que** les textiles à nettoyer comprennent des matériaux naturels, des matériaux synthétiques ou des mélanges de ceux-ci.

10. Procédé selon l'une quelconque des revendications 1 à 9, **caractérisé en ce que** le linge comprend des lavettes, des vêtements et des étoffes.

11. Procédé selon l'une quelconque des revendications 1 à 10, **caractérisé en ce que** le traitement du linge se déroule à une température de 30 à 90 °C, de préférence de 40 à 70 °C.

12. Procédé selon l'une quelconque des revendications 1 à 11, **caractérisé en ce qu'**il est appliqué dans des laveries industrielles.

REFERENCES CITED IN THE DESCRIPTION

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