

12

EUROPEAN PATENT SPECIFICATION

45 Date of publication of patent specification: 19.10.88

71 Application number: 85201127.9

72 Date of filing: 09.07.85

51 Int. Cl.4: **C 11 D 3/36, C 11 D 1/34,**
C 11 D 3/30, C 11 D 1/40,
D 06 M 13/26, D 06 M 13/34

54 **Dispersible fabric softeners.**

30 Priority: 18.07.84 GB 8418320

43 Date of publication of application:
22.01.86 Bulletin 86/04

45 Publication of the grant of the patent:
19.10.88 Bulletin 88/42

64 Designated Contracting States:
AT BE CH DE FR GB IT LI LU NL SE

56 References cited:
CH-A- 358 062
DE-A-2 659 705
DE-B-1 084 231
FR-A-2 372 926
FR-A-2 385 839
FR-A-2 389 671

73 Proprietor: **THE PROCTER & GAMBLE**
COMPANY

One Procter & Gamble Plaza
Cincinnati Ohio 45202 (US)

64 CH GB LI SE AT

73 Proprietor: **Procter & Gamble European**
Technical Center
Temselaan 100
B-1820 Strombeek-Bever (BE)

64 BE

72 Inventor: **Burckett St. Laurent, James Charles**
Théophile R.

2, H. Vandevelde Laan
B-1980 Tervuren (BE)
Inventor: **Busch, Alfred**
Luitberg 10
B-1820 Grimbergen (BE)

74 Representative: **Brooks, Maxim Courtney et al**
Procter & Gamble European Technical Center
Temselaan 100
B-1820 Strombeek-Bever (BE)

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid. (Art. 99(1) European patent convention).

EP 0 168 889 B1

Description**Technical field**

5 The present invention relates to means of treating fibers and fabrics, wherein a sub-stoichiometric complex of amines and phosphate esters is used to provide softness and anti-static benefits. Detergent compositions containing said amine-phosphwze ester softeners are disclosed. The compositions herein can be used to soften fabrics.

Background

10 The use of softeners to treat fabrics after a washing operation is a well-known laundering practice. Fabric softeners are, in the main, water-insoluble cationic materials that are incompatible with anionic deterative surfactants used in most fabric washing compositions. For that reason, the softening operation is generally carried out in the laundry rinse bath after the surfactant has been removed from the washing machine. This entails additional work for the user.

15 Formulators of fabric laundering compositions have long sought means whereby fabric washing and softening could be done concurrently. Laundering methods employing clay softeners, mixtures of clays and various amine materials and the like, are described in the DE—A—29 64 114, 28 57 163, 24 39 541, 23 34 899 and EP—A—23367 26528 and 28432. The use of mixtures of amines and soaps (salt of fatty acids) as through-the-wash softeners is disclosed in U.K. Patent 1,514,276.

20 The prior art also describes the use of various cationic materials in sheet form. See U.S. Patent 4,220,562.

The prior art also teaches the softener use of alkyl phosphonate and quaternary ammonium compounds. EP—A—0 006 268, filed June 11, 1979.

25 The prior art also teaches various mixtures of phosphate esters in detergents with fabric softening action BE—A—802,679.

The present invention employs amine-phosphate ester softeners in laundry compositions to provide cleaning and softening concurrently. The softeners herein provide softening and anti-static benefits, especially when used with clay softeners. Importantly, the use of phosphate esters in sub-stoichiometric quantities with the amines in the manner disclosed herein advantageously enhances deposition of the amines on fabrics by as much as 1.5- or 2-fold, as compared with prior art amine fabric softening compositions.

Summary of the invention

35 The present invention encompasses a method for softening fabrics by contacting same with sub-stoichiometric, water-insoluble, water-dispersible complexes of amine and phosphate ester (as described more fully, hereinafter) in the presence of water. The method can be carried out, for example, by tumbling damp fabrics with said complexes in a hot air clothes dryer. In another mode, said complexes can be used in an aqueous rinse bath, for example in a laundry rinse. In still another mode, the method can be carried out concurrently with a fabric cleansing treatment, for example in a detergent-containing laundry liquor, to soften fabrics.

40 The invention also encompasses detergent compositions (preferably granular) which may be described succinctly as containing conventional detergent ingredients such as deterative surfactants (including anionics), detergency builders, optical brighteners, deterative enzymes, fabric bleaches, and the like, all at rather conventional levels, as well as clay fabric softeners (preferably, smectite clays), said compositions being characterized in that they contain at least 0.1% (preferably 1.0% to 15%) of the aforesaid sub-stoichiometric, water-insoluble, water-dispersible amine-phosphate ester softeners. The most preferred compositions with clay are formulated to contain not more than 5% (preferably not more than 1%—2%) of a nonionic deterative surfactant.

50 The invention also encompasses an article for use in a laundry bath or rinse bath, or in a laundry dryer, comprising the aforesaid sub-stoichiometric amine-phosphate ester softeners releasably affixed to a non-particulate water-insoluble carrier, for example, a sheet of paper or fabric. Such compositions are optionally formulated to contain a bleach activator and such activator-containing compositions are especially useful in laundry baths.

55 The ingredients and means for preparing the compositions are disclosed more fully hereinafter. All weights and proportions are by weight, unless otherwise specified.

Detailed description of the invention

60 As noted hereinafter, the compositions of this invention comprise, in major part, conventional ingredients that are quite familiar to formulators of laundry compositions. One of the major advantages of the amine-phosphate softeners used herein is that they are entirely compatible with such conventional laundry ingredients, used at conventional concentrations.

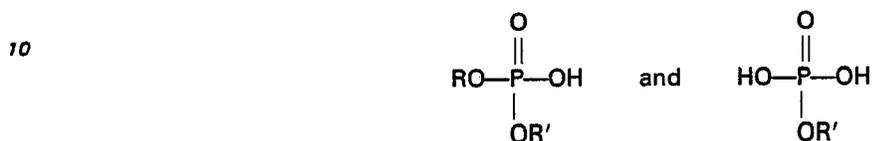
Amines

65 The amines employed herein are of the formula $R_1R_2R_3N$ where R_1 is C_6 to C_{20} alkyl, R_2 is C_1 to C_{20} alkyl or hydrogen, and R_3 is C_1 to C_{10} alkyl or hydrogen.

Preferably, the amines have both R₁ and R₂ as C₆—C₂₀ alkyl, with C₁₆—C₁₈ alkyl, being most preferred, and with R₃ as C₁—C₃ alkyl. Mixed amines, such as dicoconutalkyl- and ditallowalkyl-methyl amines can be used. Such materials are commercially available under Trade Marks such as "Armeen"[®].

5 Phosphate ester

The phosphate esters which are critical to the practice of this invention are commercially available materials of the general formulae:



15 wherein R and R' are C₁—C₂₀ alkyl or (preferably) ethoxylated alkyl groups of the general formulae: alkyl-(OCH₂CH₂)_Y, wherein the alkyl substituent is C₁—C₂₀, preferably C₈—C₁₆ and Y is an integer of 1 to 15, preferably 2—10, most preferably 2—5. Such compounds are prepared by known methods from phosphorus pentoxide, phosphoric acid or phosphorus oxy halide and alcohols or ethoxylated alcohols.

20 It will be appreciated that the formulae depicted represent mono- and di-esters, and commercial phosphate esters will generally comprise mixtures of the mono- and di-esters, together with some proportion of tri-ester. Typical commercial esters are available under the Trade Marks "Phospholan"[®] PDB3 (Diamond Shamrock) and "Servoxyl"[®] VPAZ (Servo).

25 Amine-phosphate ester softeners

The prior art describes various phosphate ester-amine compounds—see U.S. Patent 3,364,192—some of which have been disclosed for use as fiber-finishing agents—see U.S. Patents 3,434,874; 3,428,481; and 3,560,382. However, the prior art compositions generally involve 1:1 (mole basis) compounds or complexes, i.e., compounds or complexes from stoichiometric mixtures. Surprisingly, such stoichiometric complexes are of no use in the present invention, apparently because they form unstable dispersions prone to aggregation. In contrast, the sub-stoichiometric mixtures herein are extremely well dispersed in water, but are not water-soluble.

While not intending to be limited by theory, it is instructive to consider the physico-chemical behaviour of the amine-phosphate ester softeners herein, inasmuch as this can be of assistance to the formulator.

35 It will be appreciated that the amines used herein and in art-disclosed compositions exist in aqueous solutions as fairly coarse particles, or oily globules, having a spectrum of sizes. It appears that attachment of such particles to fabrics to provide the desired softening action can be considerably enhanced by reduction of their average size; coarser material being rinsed away by mechanical action. On the other hand, complete solubilization or micellization is to be avoided since this also leads to inadequate attachment of the amine to fabrics.

40 In addition to size of the dispersed amine particles, their phase structure is of importance since this will influence their effective spreading after attachment to fiber or fabric surfaces. Phase structure influences also the stability of amine dispersions.

Consideration of these factors apparently explains why, on one hand, amines untreated with phosphate ester and on the other hand, stoichiometric amine-ester complexes are of very low effectiveness relative to the sub-stoichiometric mixtures of amine-phosphate ester now disclosed.

45 It has now been discovered that sub-stoichiometric mixtures of amine-phosphate ester exist as aqueous dispersions whose particles readily deposit on, spread on, and soften, fibers and fabrics.

50 By "sub-stoichiometric" herein is meant that there is an excess of amine relative to phosphate ester. In general, there are at least about two parts amine (on a weight basis) per one part (weight) of phosphate ester, but this will, of course, vary with the molecular weights of the amine and ester, respectively. The objective is to have a readily-dispersible (in water) mixture, but not one that is water-soluble.

55 Useful amine-phosphate esters can easily be observed by a simple test. The amines herein, suspended in water, form a generally greasy-appearing, non-homogeneous mixture. By contrast, the sub-stoichiometric amine-phosphate ester mixtures used in this invention form stable "milky" suspensions in water. Laboratory estimates of the particle sizes of these suspensions indicate that 60% to 80% of the particles fall within the size range of 0.1 to 8 micrometers; 20% to 40% within the range 8 to 20 micrometers; and essentially all the particles are below 40 micrometers in diameter.

60 For the preferred sub-stoichiometric amine-phosphate ester softeners herein, the weight ratio of amine:phosphate ester is above 5:1, generally 7:1 to 15:1, most preferably 10:1. Again, such softeners are selected to be water-dispersible, not water-soluble.

65 In general terms, the amine-phosphate ester softeners are prepared separately from the balance of the compositions, and are preferably then added to the other, conventional ingredients to provide the final formulations. This can most conveniently be done by preparing a melt of the phosphate ester and the amine and maintaining the melt stage for a few minutes. The melt can then be layered onto a sheet substrate to prepare, for example, a dryer-added fabric softener. To prepare a detergent, the melt can be

solidified and comminuted to the desired particles size (e.g., in an extruder), and dry-mixed with a granular detergent composition. The melt may also be sprayed onto detergent granules. The melt may also be dispersed into a stirred, aqueous crutcher mix comprising the balance of the deterative ingredients, and spray-dried in standard fashion. This crutcher-addition is less preferred, as it leads to some decomposition of the complex. Simply adding the amine and phosphate ester, individually, to a detergent crutcher mix does not secure the intended benefits of this invention.

An especially preferred softener herein is prepared by melting together ten parts by weight of di-C₁₂—C₁₄ alkyl monomethyl amine and one part by weight of a mono-[C₁₂—C₁₄ alkyl (EO)₁₋₅] ester of phosphoric acid, sold under the Trade Mark "Servoxyl VPAZ®".

The amine-phosphate ester softeners will generally be used at levels of at least 0.1%, preferably 1% to 15%, in detergent compositions; at levels of at least 1%, preferably 1% to 25% in rinse-added fabric softeners; and at levels of 2% to 60% in dryer- and wash machine- added sheets (where the balance of the composition mainly comprises the weight of the sheet substrate).

15 Softener clay

The above-disclosed amine-phosphate ester softeners are preferably used in granular detergent compositions, where they are most preferably used in combination with a detergent-compatible clay fabric softener. Such clay softeners are well-known in the detergency patent literature and are in broad commercial use, both in Europe and in the United States. Included among such clay softeners are various heat-treated kaolins and various multi-layer smectites. Preferred clay softeners are smectite softener clays that are described in German patent document 23 34 899 and in U.K. Patent 1,400,898 which can be referred to for details. Softener clays are used in the preferred compositions at levels of at least 1%, generally 1—20%, preferably 2—7%.

25 Deterative surfactants

The detergent compositions of this invention will contain organic surface-active agents ("surfactants") to provide the usual cleaning benefits associated with the use of such materials.

Deterative surfactant useful herein include well-known synthetic anionic, amphoteric and zwitterionic surfactants. Typical of these are the alkyl benzene sulfonates, alkyl- and alkylether sulfates, paraffin sulfonates, olefin sulfonates, amine oxides, α -sulfonates of fatty acids and of fatty acid esters, and the like, which are well-known from the detergency art. In general, such deterative surfactants contain an alkyl group in the C₉—C₁₈ range; the anionic deterative surfactants can be used in the form of their sodium, potassium or triethanolammonium salts. U.S. Patent 4,111,855 contains detailed listings of such typical deterative surfactants. C₁₁—C₁₆ alkyl benzene sulfonates, C₁₂—C₁₈ paraffin-sulfonates and alkyl sulfates are especially preferred in the compositions of the present type.

Also useful herein as the surfactant are the water-soluble soaps, e.g. the common sodium and potassium coconut or tallow soaps well-known in the art.

It is to be understood that the use of typical alkoxyated nonionic surfactants (e.g. the C₉—C₁₈ alkyl) alcohols and alkyl phenols with 5 to 20 ethoxyl groups) are preferably limited in the practice of this invention to levels of not more than 5%, preferably not more than 2%, most preferably 0—1%, of the compositions when clay is present as a co-softener, since alkoxyates can interfere with the softening properties of clay. In clay-free compositions, the alkoxyated nonionics can be used at any desired level.

The surfactant component can comprise as little as 1% of the laundry detergent compositions herein, but generally the compositions will contain 5% to 40%, preferably 6% to 30%, of surfactant. Mixtures of the anionics, such as the alkyl benzene sulfonates, alkyl sulfates and paraffin sulfonates are preferred for through-the-wash cleansing of a broad spectrum of soils and stains from fabric.

Deterative adjuncts

The compositions herein can contain other ingredients which aid in their cleaning performance. For example, it is highly preferred that through-the-wash detergent compositions contain a detergent builder and/or metal ion sequestrant. Compounds classifiable and well-known in the art as detergent builders include the nitrilotriacetates, polycarboxylates, citrates, water-soluble phosphates such as tripolyphosphate and sodium ortho- and pyro-phosphates, silicates, and mixtures thereof. Metal ion sequestrants include all of the above, plus materials like ethylene diaminetetraacetate, the amino-polyphosphonates and phosphates (Dequest®) and a wide variety of other poly-functional organic acids; and salts too numerous to mention in detail here. See U.S. Patent 3,579,454 for typical examples of the use of such materials in various cleaning compositions. In general, the builder/sequestrant will comprise 0.5% to 45% of the composition. The 1—10 micrometer size zeolite (e.g. zeolite A) builders disclosed in German Patent 24 22 655 are especially preferred for use in low-phosphate compositions which contain the softeners described herein.

The laundry compositions herein also preferably contain enzymes to enhance their through-the-wash cleaning performance on a variety of soils and stains. Amylase and protease enzymes suitable for use in detergents are well-known in the art and in commercially available liquid and granular detergents. Commercial deterative enzymes (preferably a mixture of amylase and protease) are typically used at levels of 0.001% to 2%, and higher, in the present compositions.

Moreover, the compositions herein can contain, in addition to ingredients already mentioned, various other optional ingredients typically used in commercial products to provide aesthetic or additional product performance benefits. Typical ingredients include pH regulants, perfumes, dyes, bleaches, optical brighteners, soil suspending agents, hydrotopes and gel-control agents, freeze-thaw stabilizers, bactericides, preservatives, suds control agents, bleach activators and the like.

The compositions can further contain a peroxygen bleach activator, particularly tetraacetyl ethylenediamine (TAED), typically from 0.1% to 5%, preferably from 0.5% to 2.5%. Other highly desirable detergent ingredients for use in the detergent compositions of the present invention are quaternary ammonium compounds of the formula $R_4R_5R_6R_7N^+X^-$, wherein R_4 is alkyl having from 10 to 20, preferably from 12—18 carbon atoms, and R_5 , R_6 and R_7 are each C_1 to C_4 alkyl preferably methyl; X^- is an anion, e.g. chloride. Examples of such quaternary ammonium compounds include monotallowalkyl trimethyl ammonium chloride and mono(cocoalkyl) trimethyl ammonium methosulfate. The quaternary ammonium compounds can be used at levels from 0.5% to 5%, preferably from 1% to 3%. Detergent compositions containing both TAED and the mono(long chain alkyl) tri(short chain alkyl) ammonium compound are highly preferred.

In a through-the-wash laundry mode, the compositions are typically used at a concentration of at least 500 ppm, preferably 0.10% to 2.5%, in an aqueous laundry bath at pH 7—11 to launder fabrics. The laundering can be carried out over the range from 5°C to the boil, with excellent results.

In an alternate mode, the amine-phosphate ester softeners herein may be releasably adsorbed or releasably coated onto a non-particulate water-insoluble substrate such as a non-woven or paper sheet or flexible sponge mat, or the like. Such sheet-form objects may be added to the laundry or rinse bath, or to the laundry dryer, where the softener is released to provide fabric softening. In an alternate, and highly preferred, mode the amine-phosphate ester softener is used in sheet form in combination with a bleach activator (such as tetraacetyl ethylene diamine or a straight- or branched-chain C_6 — C_{10} oxybenzene sulfonate) as a combined perborate-activator and softener in a laundry liquor. See, for example U.S. Patent 4,220,562.

Such sheet-form products will generally employ 1—20 grams of the amine-phosphate ester softener and 1—20 grams of the bleach activator.

It is to be understood that the compositions and processes of this invention are carried out in a manner that will, typically, deposit at least a few milligrams (generally, at least 1—1000 mg) of the sub-stoichiometric amine-phosphate ester softener per square meter on the fabric being treated, as will be seen in the following examples.

Industrial application

The following examples are typical of the preferred compositions of this invention, but are not intended to limit the scope of the invention.

Example I

A mix of ditallow methyl amine (total 3.8% of complete formulation after spray-drying) and monoconotalkyl(ethoxy)1—5 phosphoric acid ester (0.38% of complete formulation) are admixed, melted in a jacketed bath, and maintained as a melt for about ten minutes. Stirring assures homogeneity.

A standard aqueous crutcher mix comprising the following ingredients is prepared (percentages listed relate to percent ingredients in the complete formulation after spray-drying).

Ingredients	Percent
C_{11-12} alkyl benzene sulfonate	6.2
Tallow alcohol ethoxylate (EO11)	1.0
Sodium perborate	20.0
Sodium tripolyphosphate	24.0
Sodium sulfate	22.0
Sodium silicate	8.0
Smectite Clay*	2.4
Carboxymethyl cellulose	0.4
Polyacrylate (soil suspender)	1.7
Enzymes	0.5
Optical brightener	0.23
Sulphonated zinc phthalocyanine**	25 ppm
EDTA	0.2
Perfume/copper salts/minors	0.5
Moisture	to 100

* Natural smectite; ion exchange capacity above 50 meq/100 g clay;

** U.S. Patent 3, 927 967

The crutcher mix is handled in entirely standard fashion, and spray-dried to form a granular composition.

The amine-phosphate ester softener is added to the spray-dried granules as particles or "prills".

The composition of Example I is free-flowing and provides excellent cleaning and through-the-wash fabric softening when used at laundry concentration of 0.1% and above.

In an alternate mode, the amine-phosphate ester softener can be sprayed onto the spray-dried granules.

The composition of Example I may be modified by adding 1.0% tetraacetyl ethylenediamine (TAED) as a perborate bleach activator. It is preferred that materials such as bleach activators and enzymes be dry-mixed with the balance of the composition, after spray-drying.

The composition may be modified further by adding, in addition to TAED, 2.4% monotalallowalkyl trimethyl ammonium chloride.

Example II

A low-P spray-dried detergent formulation is as follows:

	Ingredient	Percent
	Zeolite A (1—10 μm)	26.0
20	Sodium nitrilotriacetate	5.0
	Smectite clay*	3.0
	Amine-phosphate Ester**	4.1
	C ₁₁₋₁₂ alkyl benzene sulfonate (Na)	6.5
	Tallow ethoxylate (EO 9—11)	0.5
25	Sodium perborate · 4H ₂ O	20.0
	Sodium silicate	8.0
	CMC	1.0
	Sodium sulfate	20.0
	Enzymes (1:1 amylase/protease)***	1.5
30	Optical brightener	0.5
	TAED	1.2
	Water, minors	to 100

* As Gelwhite® GP (TM); CaCO₃ ion exchange capacity 70 Meq/100 g.

** As in Example I.

*** Dry-mixed with composition.

The composition of Example II is prepared by spray-drying an aqueous crutcher mix, in the manner described for Example I. In use, the composition gives excellent cleaning and through-the-wash fabric softening performance.

Example III

A clay-free composition is prepared by removing the clay from Example I and substituting therefor an additional softener comprising monotalallowalkyl trimethyl ammonium chloride as 2.4% of the total composition.

Example IV

A laundry additive product is prepared by warming 6.5 g of bis(tetradecyl)methyl amine and 0.8 g of tetradecylphosphate to form a melt, and spreading the melt onto an ordinary disposable paper hand-towel (20×20 cm). 4 grams of TAED powder (1—10 micrometers) are sprinkled onto, and pressed into, the melt before it has the chance to solidify.

The article of Example IV is added to a laundry liquor containing a commercial perborate/clay detergent composition (DASH®-3; Tradé Märk) to enhance through-the-wash softening and bleaching performance.

Example V

The article of Example IV is modified by deleting the TAED and replacing the Example IV softener with 3.5 g of the amine-phosphate ester softener of Examples I and II. The resulting article is tumbled with damp fabrics in a standard hot air clothes dryer, whereby the softener is transferred to the fabrics to impart softness.

Example VI

A fine-fabric laundering composition with fabric softening properties is as follows:

	Ingredient	Percent
	C ₁₀₋₁₄ alkyl sulfate	9.0
	Tallow alkyl benzene sulfonate	2.0
5	Coconut soap	4.0
	Glycerine	3.0
	Amine-phosphate ester complex*	6.0
	Triethanolamine	to pH 7.0
	Perfume	0.25
10	Water	to 100

* Octadecyl amine (15 parts)/bis-decylphosphate (1 part) as melt.

The composition of Example VI is in the form of a "milky" liquid.

Claims

1. A method of softening fibers or fabrics which comprises contacting said fibers or fabrics with an aqueous laundry liquor comprising a water-dispersible complex of an amine of the formula R₁R₂R₃N where R₁ is C₆ to C₂₀, alkyl R₂ is C₁ to C₂₀ alkyl or hydrogen, and R₃ is C₁ to C₁₀ alkyl or hydrogen, and a phosphate ester of the formula



wherein R and R' are C₁—C₂₀ alkyl or (preferably) ethoxylated alkyl groups of the general formulae: alkyl—(OCH₂CH₂)_y, wherein the alkyl substituent is C₁—C₂₀, preferably C₈—C₁₆ and Y is an integer of 1 to 15, preferably 2—10, most preferably 2—5, characterized in that said complex contains a stoichiometric excess of amine relative to phosphate ester.

2. A method of softening fabrics which is carried out by tumbling damp fabrics in a hot air clothes dryer while contacting said fabrics with the complex of Claim 1.

3. A laundry detergent composition comprising conventional detergent ingredients, characterized in that it contains at least 0.1% by weight of the complex of Claim 1.

4. A composition according to Claim 3 which contains from 1% to 15% by weight of said complex.

5. A composition according to Claim 3 or 4 which also contains at least 1% by weight of a clay fabric softener.

6. A composition according to Claim 5 which contains not more than 5% by weight of an alkoxyated nonionic detergent surfactant.

7. A composition according to any of Claims 3 through 6 which contains a detergency builder selected from phosphate, nitrilotriacetate, polycarboxylate, citrate and zeolite builders, or mixtures thereof.

8. A composition according to any of the Claims 3 through 7 which contains from 0.1% to 5% by weight of tetraacetyl ethylenediamine and from 0.5% to 5% by weight of a quaternary ammonium compound of the formula R₄R₅R₆R₇N⁺X⁻, wherein R₄ is alkyl having from 10 to 20 carbon atoms, R₅, R₆ and R₇ are each alkyl having from 1 to 4 carbon atoms, and X⁻ is an anion.

9. An article for use in a laundry or rinse bath, or in a laundry dryer, comprising a non-particulate water-insoluble substrate, preferably a flexible sheet, having releasably affixed thereto a fabric softener which comprises the complex of Claim 1.

10. An article according to Claim 9 which additionally has affixed thereto a bleach activator.

Patentansprüche

1. Ein Verfahren zum Weichmachen von Fasern oder Textilien, welches das Inberührungbringen der genannten Fasern oder Textilien mit einer wässrigen Wäschewaschflüssigkeit umfaßt, die einen wasserdispergierbaren Komplex eines Amins der Formel R₁R₂R₃N, worin R₁ C₆—C₂₀-Alkyl ist, R₂ C₁—C₂₀-Alkyl oder Wasserstoff ist, und R₃ C₁—C₁₀-Alkyl oder Wasserstoff ist, und eines Phosphatesters der Formel



enthalt, worin R und R' C₁-C₂₀-Alkyl- oder (vorzugsweise) ethoxylierte Alkylgruppen der allgemeinen Formel: Alkyl-(OCH₂CH₂)_y sind, wobei der Alkylsubstituent C₁-C₂₀, vorzugsweise C₈-C₁₆, ist, und y eine ganze Zahl von 1 bis 15, vorzugsweise 2 bis 10, und in am höchsten bevorzugter Weise 2 bis 5, ist, dadurch gekennzeichnet, daß der genannte Komplex, bezogen auf Phosphatester, einen stöchiometrischen Überschuß von Amin enthält.

2. Ein Verfahren zum Weichmachen von Textilien, welches durch Umwälzen von feuchten Textilien in einem Heißluftwäschetrockner ausgeführt wird, während die genannten Textilien mit dem Komplex von Anspruch 1 in Berührung sind.

3. Eine Wäschewaschdetergengzusammensetzung, enthaltend herkömmliche, deterstive Bestandteile, dadurch gekennzeichnet, daß sie wenigstens 0,1 Gew.-% des Komplexes von Anspruch 1 enthält.

4. Eine Zusammensetzung nach Anspruch 3, welche 1 Gew.-% bis 15 Gew.-% des genannten Komplexes enthält.

5. Eine Zusammensetzung nach Anspruch 3 oder 4, welche auch wenigstens 1 Gew.-% eines Textilweichmachers auf Tonbasis enthält.

6. Eine Zusammensetzung nach Anspruch 5, welche nicht mehr als 5 Gew.-% eines alkoxylierten nichtionischen, deterstiven grenzflächenaktiven Mittels enthält.

7. Eine Zusammensetzung nach einem der Ansprüche 3 bis 6, welche einen Deterstengerüststoff enthält, der aus Phosphat-, Nitrilotriacetat-, Polycarboxylat-, Citrat- und Zeolith-Gerüststoffen oder Gemischen davon, ausgewählt ist.

8. Eine Zusammensetzung nach einem der Ansprüche 3 bis 7, welche 0,1 Gew.-% bis 5 Gew.-% Tetraacetylenylendiamin und 0,5 Gew.-% bis 5 Gew.-% einer quaternären Ammoniumverbindung der Formel R₄R₅R₆R₇N⁺X⁻ enthält, worin R₄ Alkyl mit 10 bis 20 Kohlenstoffatomen bedeutet, R₅, R₆ und R₇ jeweils Alkyl mit 1 bis 4 Kohlenstoffatomen sind, und X⁻ ein Anion ist.

9. Ein Erzeugnis zur Verwendung in einem Wäschewasch- oder Spülbad, oder in einem Wäschetrockner, enthaltend ein nicht-teilchenförmiges, wasserunlösliches Substrat, vorzugsweise ein biegsames Blatt, das darauf einen Textilweichmacher, welcher den Komplex von Anspruch 1 enthält, freisetzbar angebracht aufweist.

10. Ein Erzeugnis nach Anspruch 9, welche zusätzlich darauf einen Bleichmittelaktivator angebracht aufweist.

Revendications

1. Procédé d'adoucissement de fibres ou de tissus, qui comprend la mise en contact des fibres ou des tissus avec une liqueur de blanchissage aqueuse comprenant un complexe dispersable dans l'eau d'une amine de formule R₁R₂R₃N, dans laquelle R₁ est un groupe alkyle en C₆-C₂₀, R₂ est un groupe alkyle en C₁-C₂₀ ou un hydrogène, et R₃ est un groupe alkyle en C₁-C₁₀ ou un hydrogène et d'un ester phosphate de formule



formules dans lesquelles R et R' sont des groupes alkyle ou (de préférence) alkyle éthoxylé en C₁-C₂₀, de formules générales: alkyle-(OCH₂CH₂)_y, dans lesquelles le substituant alkyle possède 1 à 20 atomes de carbone, de préférence 8 à 16 atomes de carbone, et y est un nombre entier de 1 à 15, de préférence de 2 à 10, mieux encore de 2 à 5, caractérisé en ce que le complexe contient un excès stoechiométrique de l'amine par rapport à l'ester phosphate.

2. Procédé d'adoucissement de tissus, réalisé par passage au tambour des tissus humides, dans un sécheur pour vêtements à air chaud, ces tissus étant au contact du complexe de la revendication 1.

3. Composition déterstivante de blanchissage comprenant des ingrédients déterstifs classiques, caractérisée en ce qu'elle contient au moins 0,1% en poids du complexe de la revendication 1.

4. Composition selon la revendication 3, qui contient de 1% à 15% en poids du complexe.

5. Composition selon la revendication 3 ou 4, qui contient aussi au moins 1% en poids d'un adoucissant pour tissus à base d'argile.

6. Composition selon la revendication 5, qui ne contient pas plus de 5% en poids d'un tensioactif déterstif non ionique alcoxylé.

7. Composition selon l'une quelconque des revendications 3 à 6, qui contient un adjuvant de

0 168 889

détergence choisi parmi les adjuvants phosphate, nitrilotriacétate, polycarboxylate, citrate et zéolite, ou des mélanges de ceux-ci.

5 8. Composition selon l'une quelconque des revendications 3 à 7, qui contient de 0,1% à 5% en poids de tétraacétyléthylène-diamine et de 0,5% à 5% en poids d'un composé d'ammonium quaternaire de formule $R_4R_5R_6R_7N^+X^-$, dans laquelle R_4 est un groupe alkyle comportant 10 à 20 atomes de carbone, R_5 , R_6 et R_7 sont chacun des groupes alkyle comportant 1 à 4 atomes de carbone, et X^- est un anion.

9. Article utilisable dans un bain de blanchissage ou de rinçage, ou dans un sécheur à linge, comprenant un substrat insoluble dans l'eau non particulaire, de préférence une feuille flexible, à laquelle est fixée, de façon libérable, un adoucissant pour textiles qui comprend le complexe de la revendication 1.

10 10. Article selon la revendication 9, auquel est fixé en outre un activateur de blanchiment.

15

20

25

30

35

40

45

50

55

60

65