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(54) **Use of soil release polymer in fabric treatment compositions**

Verwendung eines schmutzlösenden Polymers in Stoffbehandlungszusammensetzungen

Utilisation d'un polymère de libération de salissures dans des compositions de traitement des tissus

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- **O'LENICK A J: "SOIL RELEASE POLYMERS" 1 October 1999 (1999-10-01), JOURNAL OF SURFACTANTS AND DETERGENTS, SPRINGER, BERLIN, DE, PAGE(S) 553 - 557 , XP000893935 ISSN: 1097-3958 * page 553, left-hand column ***
- **ANONYMOUS: 'Allergen', [Online] 26 September 2011, Retrieved from the Internet: <URL:http://en.wikipedia.org/wiki/Allergen> [retrieved on 2011-10-07]**

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Description

FIELD OF INVENTION

5 **[0001]** The present invention relates to the use of fabric treatment composition comprising a soil release polymer for promoting repellency of allergens from textiles.

BACKGROUND OF THE INVENTION

10 **[0002]** Fabric treatment compositions, such as laundry compositions generally provide several benefits for textiles, the most common being to remove dirt and stains during the wash cycle and also to soften the textile during the rinse cycle. However, nowadays, consumers expect more from fabric treatment compositions. Indeed, consumers are, now, looking for compositions providing additional benefits i.e. for compositions which not only provide good cleaning or softening performances, but also which help them, at the same time, to solving their health and environmental problems.

15 **[0003]** Important public health problem, allergy reactions are constantly increasing. Nowadays, it is estimated that 20 to 30% of the population is allergic. Allergy is a disorder of the immune system and is due to environmental substances known as allergens.

20 **[0004]** Allergens are commonly found in dust and, specifically, in house dust. In most cases allergens are small soluble proteins or glycoproteins that are able to penetrate the nasal and respiratory mucosae. Allergens can be, for example, derived from pollens, dust mites, animal dander, insects and fungi.

[0005] The exposure to inhalant allergens is an important factor in the development of allergic diseases. Indeed, these inhaled allergens, commonly found in many households, are the most common cause of conjunctivitis, asthma and allergic rhinitis in developed countries.

25 **[0006]** Allergens accumulate on various indoor surfaces and in allergen reservoirs, such as carpets, upholstery, mattresses and pillows. Clothing accumulates ambient allergens quickly and is an important source and carrier of allergens to homes.

[0007] Frequent laundering of clothing and bedding are effective methods for removing house dust and allergens from washable items and thus are good methods for reducing allergen exposure and thus for reducing allergy reactions.

30 **[0008]** However, common laundry methods are often insufficient to substantially remove and/or neutralize many of the allergens commonly present on textiles. There is, thus, a constant need for methods and compositions which are capable of preventing allergens from accumulating on textiles.

[0009] Surprisingly, it has been discovered that the use of some specific polymers, such as polymeric soil release agents, has a beneficial effect on the repellency of dust and of allergens.

35 **[0010]** Soil release polymers are well known ingredients in laundry detergent compositions. US 4, 007, 305 (published Feb. 8, 1977); US 4,702,857 (published Oct. 27, 1987); EP 0 707 627 (published Apr. 24, 1996); EP 991 743 (published Apr. 12, 2000) or US 7 087 572 (published Aug. 8, 2006) relates to soil-release polymers and/or to their use as ingredients in fabric care compositions. However, it has never been found that such ingredients have a specific effect on the repellency of dust and of allergen.

40 **[0011]** The present invention is based, thus, on the finding that some polymers can impart a benefit to the laundry composition contained it. Indeed, textiles treated with a laundry composition containing a polymeric soil release agents are less prone to retain dust and allergens. Polymer soil release agents have the advantage of promoting the repellency of allergen from textiles. Conveniently, laundry compositions containing such polymers can be applied repeatedly in a normal domestic laundry operation in view of improving repellency of allergen and thus decreasing the contact with allergen leading thus to a better health and less allergenic reaction of consumers using it.

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SUMMARY OF THE PRESENT INVENTION

[0012] The present invention relates to the use of a fabric treatment composition comprising a polymeric soil release agent for promoting repellency of allergens selected from animal dander and house dust mite allergens from textiles.

50 The present invention further relates to a method for repelling allergen selected from animal dander and house dust mite allergens from textiles by contacting the textile with a fabric treatment composition containing the soil release polymer.

[0013] Laundry treated in accordance with the present invention provides therefore an economical and effective method to reduce allergen exposure and dispersal from various surfaces. The present invention reduces also the probability of the allergen to cause allergic responses in host such as a human being.

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DETAILED DESCRIPTION OF THE INVENTION

[0014] The present invention relates to the use of a fabric treatment composition comprising polymeric soil release

agents for promoting repellency of allergens from textiles.

[0015] By "repellency", it is meant herein that a textile treated with the polymer according to the present invention has the ability to repel allergen from its surface, i.e. the allergen will be repulsed from the textile surface and will not adhere to its surface.

[0016] Without intended to be limited by the theories it is believed that polymers according to the present invention create a sort of coating around the textile fabrics which prevents them for attaching allergens. As a result of the repellency property, the polymers help the fabrics to repel and to "squeeze" away the dust and allergens from its surface. As a result the fabrics will not contain any allergen and will be less prone to attract them and to retain them when there are contacted to their surface. By promoting repellency, it is thus meant herein that the polymeric soil release agents will enhance the repellency benefit.

[0017] As used herein, the term "allergen" is meant to include any substances that are capable of sensitizing and inducing an allergic reaction in a host such as human being. Allergens which can be removed from textiles and fabrics, in accordance with the present invention, include, animal dander, and house dust mite allergens including house dust mite feces. All of these allergens are often found in house dust.

[0018] Surveys in the US and Europe show that 20-35% of allergic individuals are sensitive to dust mites. Animal dander, such as cat or dog, for example, is also an important source of allergens. About 10% of allergic individuals are sensitive to cat allergens. Airborne allergens derived from pollens of various weeds, trees and grasses are also important triggers for asthma and rhinitis. Inhaled pollen contributes indeed to allergic disorders in up to 25% of adults in industrialized countries.

[0019] As examples of allergens found on clothes, it can be cited, the main mite allergens of the genus *Dermatophagoides*: Der 1-Der p 1 and Der f 1; Der 2-Der p 2 and Der f 2, allergens which are abundant in mite fecal pellets and body debris. Fel d 1, the most common cat allergen, and Can f 1, the most common dog allergens, are also illustration of allergens which can be easily repelled from textiles using the polymer of the present invention.

Polymer soil release agent

[0020] The polymer of the present invention can be defined as polymeric soil release agents. As polymeric soil release agents, it is meant herein polymers having soil release properties, i.e. having the property to enhance the cleaning efficacy of the cleaning composition by improving release of greasy and oil during the laundry process. See soil release agents' definition, p.278-279, "Liquid Detergents" by Kuo-Yann Lai.

[0021] The liquid laundry composition will generally comprise from 0.01% to 20%, typically from 0.05% to 10%, preferably from 0.1% to 5%, and more preferably from 0.2% to 3 % by weight of the composition of such polymeric soil release agents.

[0022] The polymeric soil release agents of the present invention include a variety of charged, e.g., anionic or cationic (see US 4,956,447), as well as non-charged monomer units and structures may be linear, branched or star-shaped. They may include capping moieties which are especially effective in controlling molecular weight or altering the physical or surface-active properties.

[0023] Suitable polymeric soil release agents of the present invention include a sulfonated product of a substantially linear ester oligomer comprised of an oligomeric ester backbone of terephthaloyl and oxyalkyleneoxy repeat units, for example as described in US 4,968,451. Suitable polymeric soil release agents of the present invention include also polymer such as defined in US 4,711,730, for example those produced by transesterification/ oligomerization of poly(ethyleneglycol) methyl ether, DMT, PG and poly(ethyleneglycol) ("PEG"). Suitable agents include also polymer such as defined in partly- and fully- anionic-end-capped oligomeric esters of US 4,721,580, such as oligomers from ethylene glycol ("EG"), PG, DMT and Na-3,6-dioxo-8-hydroxyoctanesulfonate; also the nonionic-capped block polyester oligomeric compounds of US 4,702,857, for example produced from DMT, Me-capped PEG and EG and/or PG, or a combination of DMT, EG and/or PG, Me-capped PEG and Na-dimethyl-5-sulfoisophthalate; and also the anionic, especially sulfoaroyl, end-capped terephthalate esters of US 4,877,896,.

[0024] Polymeric soil release agents of the present invention also encompass simple copolymeric blocks of ethylene terephthalate or propylene terephthalate with polyethylene oxide or polypropylene oxide terephthalate (see US 3,959,230 and US 3,893,929) cellulosic derivatives such as the hydroxyether cellulosic polymers available as METHOCEL from Dow; and the C₁-C₄ alkylcelluloses and C₄ hydroxyalkyl celluloses.

[0025] Soil release agents of the present invention also encompass polymer characterised by poly(vinyl ester) hydrophobic segments including graft copolymers of poly(vinyl ester), e.g., C₁-C₆ vinyl esters, preferably poly(vinyl acetate), grafted onto polyalkylene oxide backbones (see US 4,000,093 and EP 0219048). Commercially available examples of polymeric soil release agents include SOKALAN[®], such as SOKALAN HP-22[®], available from BASF.

[0026] Other polymeric soil release agents of the present invention can be polyesters with repeat units containing 10-15% by weight of ethylene terephthalate together with 90-80% by weight of polyoxyethylene terephthalate, derived from a polyoxyethylene glycol of average molecular weight 300-5,000. Commercial examples include ZELCON[®] 5126

from Dupont and MILEASE[®]T from ICI.

[0027] Suitable monomers for the above polymeric soil release agents include Na 2-(2-hydroxyethoxy)-ethanesulfonate, DMT, Na- dimethyl 5-sulfoisophthalate, EG and PG (US 5,415,807).

[0028] Additional classes of polymeric soil release agents of the present invention include :

(I) nonionic terephthalates using diisocyanate coupling agents to link up polymeric ester structures (see US 4,201,824 and US 4,240,918);

(II) polymeric soil release agents with carboxylate terminal groups made by adding trimellitic anhydride to known polymeric soil release agents to convert terminal hydroxyl groups to trimellitate esters. With a proper selection of catalyst, the trimellitic anhydride forms linkages to the terminals of the polymer through an ester of the isolated carboxylic acid of trimellitic anhydride rather than by opening of the anhydride linkage. Either nonionic or anionic polymeric soil release agents of the present invention may be used as starting materials as long as they have hydroxyl terminal groups which may be esterified (See US 4,525,524);

(III) anionic terephthalate-based polymeric soil release agents of the urethane-linked variety (see US 4,201,824);

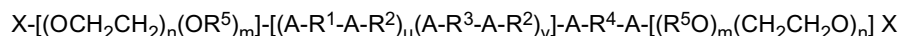
(IV) poly(vinyl caprolactam) and related co-polymers with monomers such as vinyl pyrrolidone and/or dimethylaminoethyl methacrylate, including both nonionic and cationic polymers (US 4,579,681);

(V) graft copolymers, in addition to the SOKALAN[®] types made from BASF, by grafting acrylic monomers on to sulfonated polyesters; these polymeric soil release agents have soil release and anti-redeposition activity similar to known cellulose ethers (see EP 279,134);

(VI) grafts of vinyl monomers such as acrylic acid and vinyl acetate on to proteins such as caseins (see EP 457,205);

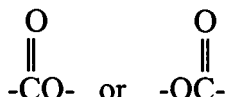
(VII) polyester-polyamide polymeric soil release agents prepared by condensing adipic acid, caprolactam, and polyethylene glycol, especially for treating polyamide fabrics (see DE 2,335,04). Other useful polymeric soil release agents are described in US Patents 4,240,918, 4,787,989, 4,525,524 and 4,877,896.

[0029] In a more preferred embodiment, the polymeric soil release agents of the present invention will have the formula :



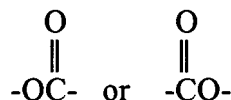
[0030] In this formula, the moiety $[(A-R^1-A-R^2)_u(A-R^3-A-R^2)_v]-A-R^4-A-$ forms the oligomer or polymer backbone of the compounds. Groups $X-[(OCH_2CH_2)_n(OR^5)_m]$ and $[(R^5O)_m(CH_2CH_2O)_n]-X$ are generally connected at the ends of the oligomer/polymer backbone. It is believed that the allergen repellency properties of the compounds (when absorbed on the fabric) are due to these hydrophilic end groups.

[0031] The linking A moieties are essentially

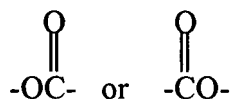


moieties, i.e. the compounds of the present invention are polyesters.

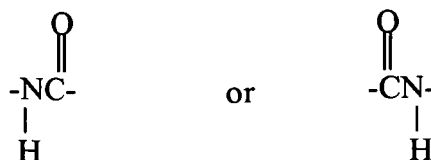
[0032] As used herein, the term "the A moieties are essentially



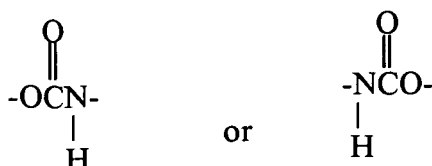
moieties" refers to compounds where the A moieties consist entirely of moieties



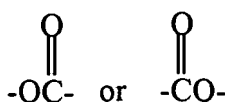
, or are partially substituted with linking moieties such as



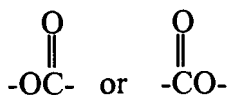
(amide), and



(urethane). The degree of partial substitution with these other linking moieties should be such that the soil release properties are not adversely affected to any great extent. Preferably, linking moieties A consist entirely of (i.e., comprise 100%) moieties



i.e., each A is either



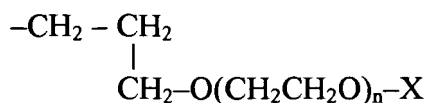
[0033] The R¹ moieties are essentially 1,4-phenylene moieties.

[0034] As used herein, the term "the R¹ moieties are essentially 1,4-phenylene moieties" refers to compounds where the R¹ moieties consist entirely of 1,4-phenylene moieties, or are partially substituted with other arylenes or alkarylene moieties, alkylene moieties, alkenylene moieties, or mixtures thereof. Arylene and alkarylene moieties which can be partially substituted for 1,4-phenylene include 1,3-phenylene, 1,2-phenylene, 1,8-naphthylene, 1,4-naphthylene, 2,2'-biphenylene, 4,4'-biphenylene and mixtures thereof. Alkylene and alkenylene moieties which can be partially substituted include ethylene, 1,2-propylene, 1,4-butylene, 1,5-pentylene, 1,6-hexamethylene, 1,7-heptamethylene, 1,8-octamethylene, 1,4-cyclohexylene, and mixtures thereof.

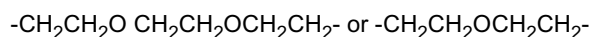
[0035] For the R¹ moieties, the degree of partial substitution with moieties other than 1,4-phenylene should be such that the soil release properties of the compound are not adversely affected to any great extent. Generally, the degree of partial substitution which can be tolerated will depend upon the backbone length of the compound, i.e., longer backbones can have greater partial substitution for 1,4-phenylene moieties. Usually, compounds where the R¹ comprise from about 50 to 100%, 1,4-phenylene moieties (from 0 to 50% moieties other than 1,4-phenylene) have adequate soil release activity. For example, polyesters made according to the present invention with a 40:60 mole ratio of isophthalic (1,3-phenylene) to terephthalic (1,4-phenylene) acid have adequate soil release activity. However, because most polyesters used in fiber making comprise ethylene terephthalate units, it is usually desirable to minimize the degree of partial substitution with moieties other than 1,4-phenylene for best soil release activity. Preferably, the R¹ moieties consist entirely of (i.e., comprise 100%) 1,4-phenylene moieties, i.e. each R¹ moiety is 1,4-phenylene.

[0036] The R² moieties are essentially ethylene moieties, or substituted ethylene moieties having C₁-C₄ alkyl or alkoxy substituents. As used herein, the term "the R² moieties are essentially ethylene moieties, or substituted ethylene moieties having C₁-C₄ alkyl or alkoxy substituents" refers to compounds of the present invention where the R² moieties consist entirely of ethylene, or substituted ethylene moieties, or are partially substituted with other compatible moieties. Examples of these other moieties include linear C₃-C₆ alkylene moieties such as 1,3-propylene, 1,4-butylene, 1,5-pentylene or

1,6-hexamethylene, 1,2-cycloalkylene moieties such as 1,2-cyclohexylene, 1,4-cycloalkylene moieties such as 1,4-cyclohexylene and 1,4-dimethylenecyclohexylene, polyoxy-alkylated 1,2-hydroxyalkylenes such as



and oxy-alkylene moieties such as



[0037] For the R² moieties, the degree of partial substitution with these other moieties should be such that the soil release properties of the compounds are not adversely affected to any great extent.

[0038] Generally, the degree of partial substitution which can be tolerated will depend upon the backbone length of the compound, i.e. longer backbones can have greater partial substitution. Usually, compounds where the R² comprise from 20 to 100% ethylene, or substituted ethylene moieties (from 0 to 80% other compatible moieties) have adequate soil release activity. For example, for polyesters made according to the present invention with a 75:25 mole ratio of diethylene glycol (-CH₂CH₂OCH₂CH₂-) to ethylene glycol (ethylene) have adequate allergen repellency activity. However, it is desirable to minimize such partial substitution, especially with oxyalkylene moieties, for best soil release activity.

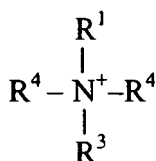
[0039] Preferably, R² comprises from 80 to 100% ethylene, or substituted ethylene moieties, and from 0 to 20% other compatible moieties.

[0040] For the R² moieties, suitable ethylene or substituted ethylene moieties include ethylene, 1,2-propylene, 1,2-butylene, 1,2-hexylene, 3-methoxy-1,2-propylene and mixtures thereof. Preferably, the R² moieties are essentially ethylene moieties, 1,2-propylene moieties or mixtures thereof. Inclusion of a greater percentage of ethylene moieties tends to improve the soil release activity of the compounds. Surprisingly, inclusion of a greater percentage of 1,2-propylene moieties tends to improve the water solubility of the compounds.

[0041] For the R³ moieties, suitable substituted C₂-C₁₈ hydrocarbylene moieties can include substituted C₂-C₁₂ alkylene, alkenylene, arylene, alkarylene and like moieties. The substituted alkylene or alkenylene moieties can be linear, branched, or cyclic. Also, the R³ moieties can be all the same (e.g. all substituted arylene) or a mixture (e.g. a mixture of substituted arylenes and substituted alkyls). Preferred R³ moieties are those which are substituted 1,3-phenylene moieties.

[0042] The substituted R³ moieties preferably have only one -SO₃M, -COOM, -O[(R⁵O)_m(CH₂CH₂O)_n]X or -A[(R²-A-R⁴-A)]_w[(R⁵O)_m(CH₂CH₂O)_n]X substituent.

[0043] M can be H or any compatible water-soluble cation. Suitable water soluble cations include the water soluble alkali metals such as potassium (K⁺) and especially sodium (Na⁺), as well as ammonium (NH₄⁺). Also suitable are substituted ammonium cations having the formula:



where R¹ and R² are each a C₁-C₂₀ hydrocarbyl group (e.g. alkyl, hydroxyalkyl) or together form a cyclic or heterocyclic ring of from 4 to 6 carbon atoms (e.g. piperidine, morpholine); R³ is a C₁-C₂₀ hydrocarbyl group; and R⁴ is H (ammonium) or a C₁-C₂₀ hydrocarbyl group (quat amine). Typical substituted ammonium cationic groups are those where R⁴ is H (ammonium) or C₁-C₄ alkyl, especially methyl(quat amine); R¹ is C₁₀-C₁₈ alkyl, especially C₁₂-C₁₄ alkyl; and R² and

R³ are each C₁-C₄ alkyl, especially methyl.

[0044] The R³ moieties having -A[(R²-A-R⁴-A)]_w[(R⁵O)_m(CH₂CH₂O)_n]X substituents provide branched compounds. R³ moieties having -A[(R²-A-R⁴-A)]_w-R²-A moieties provide cross-linked compounds. Indeed, syntheses used to make the branched compounds typically provide at least some cross-linked compounds.

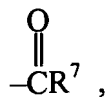
[0045] The moieties -(R⁵O)- and -(CH₂CH₂O)- of the moieties [(R⁵O)_m(CH₂CH₂O)_n] and [(OCH₂CH₂)_n(OR⁵)_m] can be mixed together or preferably form blocks of -(R⁵O)- and -(CH₂CH₂O)- moieties.

[0046] Preferably, the blocks of -(R⁵O)- moieties are located next to the backbone of the compound. When R⁵ is the

moiety $-R^2-A-R^6-$, m is 1; also, the moiety $-R^2-A-R^6-$ is preferably located next to the backbone of the compound.

[0048] For R^5 , the preferred C_3-C_4 alkylene is C_3H_6 (propylene); when R^5 is C_3-C_4 alkylene, m is preferably from 0 to 5 and is most preferably 0. R^6 is preferably methylene or 1,4-phenylene.

[0049] The moiety $-(CH_2CH_2O)-$ preferably comprises at least 75% by weight of the moiety $[(R^5O)_m(CH_2CH_2O)_n]$ and most preferably 100% by weight (m is 0). X can be H, C_1-C_4 alkyl or



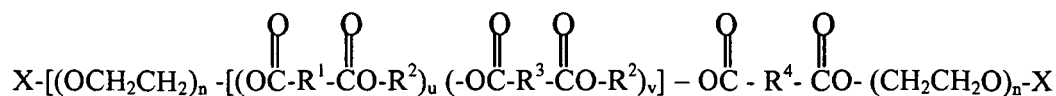
wherein R^7 is C_1-C_4 alkyl. X is preferably methyl or ethyl, and most preferably methyl.

[0050] The value for each n is at least 6, but is preferably at least 10. The value for each n usually ranges from 12 to 113. Typically, the value for each n is in the range of from 12 to 43.

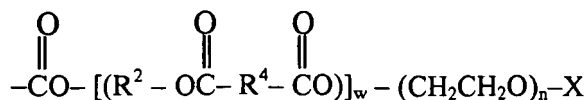
[0051] The backbone moieties $(A-R^1-A-R^2)$ and $(A-R^3-A-R^2)$ can be mixed together or can form blocks of $(A-R^1-A-R^2)$ and $(A-R^3-A-R^2)$ moieties. It has been found that the value of $u+v$ needs to be at least 3 in order for the compounds of the present invention to have significant soil release activity. The maximum value for $u+v$ is generally determined by the process by which the compound is made, but can range up to 25, i.e. the compounds of the present invention are oligomers or low molecular weight polymers. By comparison, polyesters used in fiber making typically have a much higher molecular weight, e.g. have from 50 to 250 ethylene terephthalate units. Typically, the sum of $u+v$ ranges from 3 to 10 for the compounds of the present invention.

[0052] Generally, the larger the $u+v$ value, the less soluble is the compound, especially when the R^3 moieties do not have the substituents $-COOM$ or $-SO_3M$. Also, as the value for n increases, the value for $u+v$ should be increased so that the compound will deposit better on the fabric during laundering. When the R^3 moieties have the substituent $-A[(R^2-A-R^4-A)]_w[(R^5O)_m(CH_2CH_2O)_n]X$ (branched compounds) or $-A[(R^2-A-R^4-A)]_wR^2-A$ (cross-linked compounds), the value for w is typically at least 1 and is determined by the process by which the compound is made. For these branched and cross-linked compounds the value for $u+v+w$ is from 3 to 25.

[0053] Preferred compounds of the present invention are block polyesters having the formula



wherein the R^1 moieties are all 1,4-phenylene moieties; the R^2 moieties are essentially ethylene moieties, 1,2-propylene moieties or mixtures thereof; the R^3 moieties are all potassium or preferably sodium 5-sulfo-1,3-phenylene moieties or substituted 1,3-phenylene moieties having the substituent



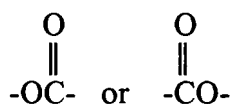
at the 5 position; the R^4 moieties are R^1 or R^3 moieties, or mixtures thereof; each X is ethyl or preferably methyl; each n is from 12 to 43; when w is 0, $u+v$ is from 3 to 10; when w is at least 1, $u+v+w$ is from 3 to 10.

[0054] Particularly preferred block polyesters are those where v is 0, i.e. the linear block polyesters. For these most preferred linear block polyesters, u typically ranges from 3 to 8, especially for those made from dimethyl terephthalate, ethylene glycol (or 1,2-propylene glycol) and methyl capped polyethylene glycol. The most water soluble of these linear block polyesters are those where u is from 3 to 5.

[0055] In a preferred embodiment, the polymeric soil release agents of the present invention have the formula (I) :



wherein each of the moieties A is selected from the group consisting of



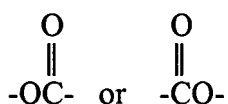
and combination thereof with either or both of the moieties,



wherein :

- each of the R¹ moieties is selected from the group consisting of 1,4-phenylene and combination thereof with 1,3-phenylene, 1,2-phenylene, 1,8-naphthylene, 1,4-naphthylene, 2,2'-biphenylene, 4,4'-biphenylene and mixtures thereof. Alkylene and alkenylene moieties can be partially substituted including ethylene, 1,2-propylene, 1,4-butylene, 1,5-pentylene, 1,6-hexamethylene, 1,7-heptamethylene, 1,8-octamethylene, 1,4-cyclohexylene or mixtures thereof. In a more preferred embodiment, the R¹ moieties are 1,4-phenylene moieties, or are partially substituted with arylene, alkarylene, alkylene or alkenylene moieties, or mixtures thereof.
- the R² moieties are selected from the group consisting of ethylene moieties, substituted ethylene moieties having C₁-C₄ alkyl or alkoxy substituents or mixtures thereof;
- the R³ moieties are substituted C₂-C₁₈ hydrocarbylene moieties having at least one -COOM, -O[(R⁵O)_m(CH₂CH₂O)_n]X or -A[(R²-A-R⁴-A)]_w[(R⁵O)_m(CH₂CH₂O)_n]X substituent;
- the R⁴ moieties are R¹ or R³ or mixtures thereof.
- each R⁵ is C₃-C₄ alkylene, or the moiety -R²-A-R⁶-, wherein R⁶ is a C₁-C₁₂ alkylene, alkenylene, arylene or alkarylene moiety;
- M is H or a water-soluble cation; each X is C₁-C₄ alkyl; m and n are number such that the moiety -(CH₂CH₂O)- comprise at least 50% by weight of the moiety [(R⁵O)_m(CH₂CH₂O)_n], provided that when R⁵ is the moiety -R²-A-R⁶-, m is 1; n is at least 10; u and v are numbers such that the sum of u+v is from 3 to 25; w is 0 or at least 1; and when w is at least 1, u, v and w are numbers such that the sum of u+v+w is from 3 to 25.

[0056] In a more preferred embodiment, in the formula (I), each moieties A is



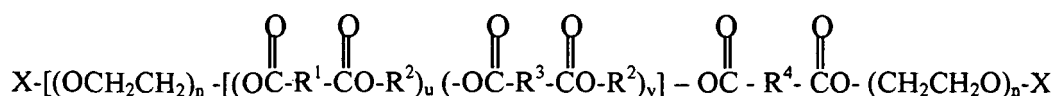
[0057] Preferably, in the formula (I), v is 0. More preferably, in the formula (I), R¹ moieties comprise from 50 to 100% of said 1,4-phenylene moieties. Even More preferably each R¹ moieties is a 1,4-phenylene moiety.

[0058] In a more preferred embodiment, in the formula (I), the R³ moieties are selected from the group consisting of substituted C₂-C₁₂ alkylene, alkenylene, arylene, alkarylene and mixture thereof. More preferably, R³ moieties has only one substituent -A[(R²-A-R⁴-A)]_w[(R⁵O)_m(CH₂CH₂O)_n]X and w is 1.

[0059] In another preferred embodiment, in the formula (I), R² moieties comprise from 20 to 100%, preferably from 80 to 100 % of ethylene moieties or substituted ethylene moieties

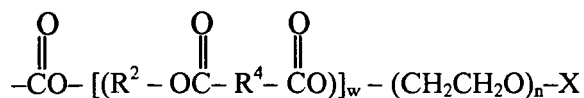
[0060] Most Preferably, in the formula (I), in the polymer according to the present invention m is 0 and n is from 12 to 119, more preferably from 12 to 43.

[0061] In another preferred embodiment, the polymeric soil release agents according to the present invention have the formula (II):



wherein :

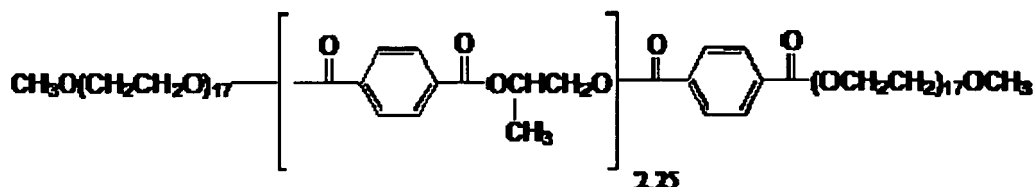
- each R¹ moieties is a 1,4-phenylene moiety;
- the R² moieties are each selected from the group consisting of ethylene moieties, 1,2-propylene moieties, 1,2 butylene moieties, 1,2 hexylene moieties, 3-methoxy-1,2 propylene moieties or mixture thereof, provided that said R² are not exclusively 1,2 butylene moieties, 1,2 hexylene moieties, 3-methoxy-1,2 propylene moieties or mixture thereof;
- the R³ moieties are each selected from the group consisting of substituted 1,3-phenylene moieties having the substituent



at the 5 position; the R⁴ moieties are R¹ or R³ moieties, or mixtures thereof; each X is C1-C4 alkyl; each n is from 12 to 43; when w is 0, u+v is from 3 to 10; when w is at least 1, u+v+w is from 3 to 10.

[0062] Preferably, in the formula (II), v is 0. More preferably, in the formula (II), R² moieties comprise from 80 to 100% ethylene moieties, 1,2- propylene moieties, or mixture thereof.

[0063] Preferably, in a the most preferred embodiment of the present invention, the polymeric soil release agents have the formula :



[0064] The polymeric soil release agents of the present invention can be prepared by art-recognized methods. US 4, 702, 857 and US 4,711,730 describe the preferred method of synthesis for the block polyesters of the present invention.

The fabric treatment compositions

[0065] As used herein, "fabric treatment compositions" include fabric treatment compositions for hand-wash, machine wash and other purposes including fabric care additive compositions and compositions suitable for use in the soaking and/or pretreatment of stained fabrics. Preferred fabric treatment compositions of the present invention include liquids, more preferably heavy duty liquid fabric treatment compositions and liquid laundry detergents for washing 'standard', non-fine fabrics as well as fine fabrics including silk, wool and the like. More preferred fabric treatment composition of the present invention is a liquid laundry detergents composition.

[0066] Thus, in a more preferred embodiment, the fabric treatment compositions according to the present invention are formulated as a liquid composition. By "liquid" it is meant herein to include liquids, gels and pastes.

[0067] Compositions formed by mixing the provided compositions with water in widely ranging proportions are also included. The fabric treatment composition of the present invention may also be present in form of a rinse-added composition for delivering fabric care benefits, e.g., in form of a rinse-added fabric-softening composition, or in form of a fabric finishing composition.

[0068] The fabric treatment compositions according to the present invention may be used at any stage of the laundering process. Preferably, the compositions are used to treat the fabric in the watch cycle or in the rinse cycle of a laundering process. More preferably, fabric treatment composition comprising a polymeric soil release agents will be used during the laundering process. In another embodiment, the composition comprising a polymeric soil release agents can be used before, or after, the laundry process and might be in the form of a pretreater composition, a spray or foaming product.

[0069] The term "fabrics" as used herein means a textile substrate, especially a fabric or garment.

[0070] The fabrics and textiles that may be treated include those which comprise cellulosic fibers, preferably from 1% to 100% cellulosic fibers (more preferably 5% to 100% cellulosic fibers, most preferably 40% to 100%). The fabric may be in the form of a garment, in which case the method of the invention may represent a method of laundering a garment. When the fabric contains less than 100% cellulosic fibers, the balance comprises other fibers or blends of fibers suitable for use in garments such as polyester, for example. Preferably, the cellulosic fibers are of cotton or regenerated cellulose

such as viscose.

[0071] A method of treating fabrics and textiles comprises the steps of contacting the fabrics with the fabric treatment composition of the present invention. Even though fabric treatment compositions are specifically discussed herein, compositions comprising polymeric soil release agent of the present invention for use in treating, cleaning, conditioning, and/or refreshing both natural and synthetic fibers are encompassed by the present invention.

[0072] The fabric treatment compositions herein are preferably, but not necessarily, formulated as aqueous compositions. Liquid fabric treatment compositions are preferred herein for convenience of use. Preferred liquid fabric treatment compositions of the present invention are aqueous and therefore, preferably may comprise water, more preferably may comprise water in an amount of from 20% to 90%, even more preferably of from 30% to 80% and most preferably 40% to 70% by weight of the total composition.

[0073] The fabric treatment compositions of the present invention may be formulated such that, during use in aqueous cleaning operations, the wash water will, preferably have a pH between 8 and 11. Preferably, between 9 and 11. Techniques for controlling pH at recommended usage levels include the use of buffers, alkalis, acids, etc., and are well known to those skilled in the art.

Adjunct Materials

[0074] While not essential for the purposes of the present invention, the non-limiting list of adjuncts illustrated hereinafter are suitable for use in the fabric treatment compositions and may be desirably incorporated in preferred embodiments of the invention, for example to assist or enhance cleaning performance, for treatment of the fabric to be cleaned, or to modify the aesthetics of the cleaning composition as is the case with perfumes, colorants, dyes or the like.

[0075] Suitable adjunct materials include, but are not limited to, surfactants, builders, chelating agents, dye transfer inhibiting agents, dispersants, enzymes, and enzyme stabilizers, catalytic metal complexes, brighteners, suds suppressors, dyes, perfumes, structure elasticizing agents, fabric softeners, carriers, hydrotropes, organic catalysts, processing aids and/or pigments. In addition to the disclosure below, suitable examples of such other adjuncts and levels of use are found in Patents US 5,576,282; US 6,306,812 and US 6,326,348.

Perfume

[0076] The fabric treatment compositions of the present invention comprise perfume as an optional but highly preferred ingredient.

[0077] While real anti-allergen benefits are obtained with the use of the polymeric soil release agent such as describe above, it is submitted that the anti-allergen benefit can be reinforced by the incorporation of specific perfume into the composition.

[0078] Preferably, the composition will contain eucalyptus perfume. By eucalyptus perfume it is meant herein that the composition will contain a eucalyptus extract, more preferably eucalyptol, the main constituent of Eucalyptus extract. More preferably, the composition of the present invention will contain a mix of green tea and eucalyptus perfumes.

[0079] Indeed, it has been established that the eucalyptus perfume and more specifically, green tea and eucalyptus perfumes, discloses herein, provide an "anti-allergen" signal to the user of the composition which reinforce therefore the anti-allergenic benefit of the composition.

[0080] Other perfumes and perfumery ingredients commonly used in laundry composition can also be used herein. Such perfumes comprise a wide variety of natural and synthetic chemical ingredients, including, but not limited to, aldehydes, ketones, esters, and the like. Also included are various natural extracts and essences which can comprise complex mixtures of ingredients, such as orange oil, lemon oil, rose extract, lavender, musk, patchouli, balsamic essence, sandalwood oil, pine oil, cedar, and the like. Finished perfumes can comprise extremely complex mixtures of such ingredients. Finished perfumes typically comprise from about 0.01 % to about 4%, by weight, of the detergent compositions herein, and individual perfumery ingredients can comprise from about 0.0001 % to about 90% of a finished perfume composition.

Surfactants

[0081] The cleaning compositions according to the present invention may comprise a surfactant or surfactant system comprising surfactants selected from nonionic and/or anionic and/or cationic surfactants and/or ampholytic and/or zwitterionic and/or semi-polar nonionic surfactants or mixtures thereof. Non-limiting examples of anionic surfactants include, mid-chain branched alkyl sulfates, modified linear alkyl benzene sulfonates, alkylbenzene sulfonates, linear and branched chain alkyl sulfates, linear and branched chain alkyl alkoxy sulfates, and fatty carboxylates. Non-limiting examples of nonionic surfactants include alkyl ethoxylates, alkylphenol ethoxylates, and alkyl glycosides. Other suitable surfactants include amine oxides, quaternary ammonium surfactants, and amidoamines.

[0082] A surfactant or surfactant system is typically present at a level of from 0.1%, preferably 1%, more preferably 5% by weight of the cleaning compositions to 99.9%, preferably 80%, more preferably 35%, preferably 30% about by weight of the cleaning compositions.

5 Anionic Surfactants

[0083] Suitable anionic surfactants useful herein can comprise any of the conventional anionic surfactant types typically used in liquid detergent products. These include the alkyl benzene sulfonic acids and their salts as well as alkoxyated or non-alkoxyated alkyl sulfate materials.

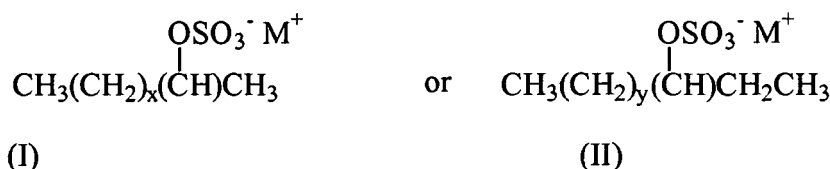
[0084] Exemplary anionic surfactants are the alkali metal salts of C₁₀₋₁₆ alkyl benzene sulfonic acids, preferably C₁₁₋₁₄ alkyl benzene sulfonic acids. Preferably the alkyl group is linear and such linear alkyl benzene sulfonates are known as "LAS". Alkyl benzene sulfonates, and particularly LAS, are well known in the art. Such surfactants and their preparation are described for example in U.S. Patents 2,220,099 and 2,477,383. Especially preferred are the sodium and potassium linear straight chain alkylbenzene sulfonates in which the average number of carbon atoms in the alkyl group is from about 11 to 14. Sodium C_{11-C14}, e.g., C₁₂, LAS is a specific example of such surfactants.

[0085] Another exemplary type of anionic surfactant comprises ethoxylated alkyl sulfate surfactants. Such materials, also known as alkyl ether sulfates or alkyl polyethoxylate sulfates, are those which correspond to the formula: R'-O-(C₂H₄O)_n-SO₃M wherein R' is a C_{8-C20} alkyl group, n is from about 1 to 20, and M is a salt-forming cation. In a specific embodiment, R' is C_{10-C18} alkyl, n is from about 1 to 15, and M is sodium, potassium, ammonium, alkylammonium, or alkanolammonium. In more specific embodiments, R' is a C_{12-C16}, n is from about 1 to 6 and M is sodium.

[0086] The alkyl ether sulfates will generally be used in the form of mixtures comprising varying R' chain lengths and varying degrees of ethoxylation. Frequently such mixtures will inevitably also contain some non-ethoxylated alkyl sulfate materials, i.e., surfactants of the above ethoxylated alkyl sulfate formula wherein n=0. Non-ethoxylated alkyl sulfates may also be added separately to the compositions of this invention and used as or in any anionic surfactant component which may be present. Specific examples of non-alkoxyated, e.g., non-ethoxylated, alkyl ether sulfate surfactants are those produced by the sulfation of higher C_{8-C20} fatty alcohols.

[0087] Conventional primary alkyl sulfate surfactants have the general formula: ROSO₃-M⁺ wherein R is typically a linear C_{8-C20} hydrocarbyl group, which may be straight chain or branched chain, and M is a water-solubilizing cation. In specific embodiments, R is a C_{10-C15} alkyl, and M is alkali metal, more specifically R is C_{12-C14} and M is sodium.

[0088] Specific, nonlimiting examples of anionic surfactants useful herein include: a) C_{11-C18} alkyl benzene sulfonates (LAS); b) C_{10-C20} primary, branched-chain and random alkyl sulfates (AS); c) C_{10-C18} secondary (2,3) alkyl sulfates having formulae (I) and (II):



wherein M in formulae (I) and (II) is hydrogen or a cation which provides charge neutrality, and all M units, whether associated with a surfactant or adjunct ingredient, can either be a hydrogen atom or a cation depending upon the form isolated by the artisan or the relative pH of the system

wherein the compound is used, with non-limiting examples of preferred cations including sodium, potassium, ammonium, and mixtures thereof, and x is an integer of at least about 7, preferably at least about 9, and y is an integer of at least 8, preferably at least about 9; d) C_{10-C18} alkyl alkoxy sulfates (AE_xS) wherein preferably x is from 1-30; e) C_{10-C18} alkyl alkoxy carboxylates preferably comprising 1-5 ethoxy units; f) mid-chain branched alkyl sulfates as discussed in US 6,020,303 and US 6,060,443; g) mid-chain branched alkyl alkoxy sulfates as discussed in US 6,008,181 and US 6,020,303; h) modified alkylbenzene sulfonate (MLAS) as discussed in WO 99/05243, WO 99/05242, WO 99/05244, WO 99/05082, WO 99/05084, WO 99/05241, WO 99/07656, WO 00/23549, and WO 00/23548.; i) methyl ester sulfonate (MES); and j) alpha-olefin sulfonate (AOS).

55 Nonionic Surfactants

[0089] Suitable nonionic surfactants useful herein can comprise any of the conventional nonionic surfactant types typically used in liquid detergent products. These include alkoxyated fatty alcohols and amine oxide surfactants. Preferred for use in the liquid detergent products herein are those nonionic surfactants which are normally liquid.

[0090] Suitable nonionic surfactants for use herein include the alcohol alkoxylate nonionic surfactants. Alcohol alkoxylates are materials which correspond to the general formula: $R^1(C_mH_{2m}O)_nOH$ wherein R^1 is a $C_8 - C_{16}$ alkyl group, m is from 2 to 4, and n ranges from about 2 to 12. Preferably R^1 is an alkyl group, which may be primary or secondary, that contains from about 9 to 15 carbon atoms, more preferably from about 10 to 14 carbon atoms. In one embodiment, the alkoxylated fatty alcohols will also be ethoxylated materials that contain from about 2 to 12 ethylene oxide moieties per molecule, more preferably from about 3 to 10 ethylene oxide moieties per molecule.

[0091] The alkoxylated fatty alcohol materials useful in the detergent compositions herein will frequently have a hydrophilic-lipophilic balance (HLB) which ranges from about 3 to 17. More preferably, the HLB of this material will range from about 6 to 15, most preferably from about 8 to 15. Alkoxylated fatty alcohol nonionic surfactants have been marketed under the tradenames Neodol and Dobanol by the Shell Chemical Company.

[0092] Another suitable type of nonionic surfactant useful herein comprises the amine oxide surfactants. Amine oxides are materials which are often referred to in the art as "semi-polar" nonionics.

[0093] Amine oxides have the formula: $R(EO)_x(PO)_y(BO)_zN(O)(CH_2R')_2.qH_2O$.

[0094] In this formula, R is a relatively long-chain hydrocarbyl moiety which can be saturated or unsaturated, linear or branched, and can contain from 8 to 20, preferably from 10 to 16 carbon atoms, and is more preferably $C_{12}-C_{16}$ primary alkyl. R' is a short-chain moiety, preferably selected from hydrogen, methyl and $-CH_2OH$. When $x+y+z$ is different from 0, EO is ethyleneoxy, PO is propyleneoxy and BO is butyleneoxy. Amine oxide surfactants are illustrated by C_{12-14} alkyldimethyl amine oxide.

[0095] Non-limiting examples of nonionic surfactants include: a) $C_{12}-C_{18}$ alkyl ethoxylates, such as, NEODOL® nonionic surfactants from Shell; b) C_6-C_{12} alkyl phenol alkoxylates wherein the alkoxylate units are a mixture of ethyleneoxy and propyleneoxy units; c) $C_{12}-C_{18}$ alcohol and C_6-C_{12} alkyl phenol condensates with ethylene oxide/propylene oxide block polymers such as Pluronic® from BASF; d) $C_{14}-C_{22}$ mid-chain branched alcohols, BA, as discussed in US 6,150,322; e) $C_{14}-C_{22}$ mid-chain branched alkyl alkoxylates, BAE_x, wherein x 1-30, as discussed in US 6,153,577, US 6,020,303 and US 6,093,856; f) Alkylpolysaccharides as discussed in U.S. 4,565,647 Llenado, issued January 26, 1986; specifically alkylpolyglycosides as discussed in US 4,483,780 and US 4,483,779; g) Polyhydroxy fatty acid amides as discussed in US 5,332,528, WO 92/06162, WO 93/19146, WO 93/19038, and WO 94/09099; and h) ether capped poly(oxyalkylated) alcohol surfactants as discussed in US 6,482,994 and WO 01/42408.

Anionic/Nonionic Combinations

[0096] In the laundry detergent compositions herein, the deterative surfactant component may comprise combinations of anionic and nonionic surfactant materials. When this is the case, the weight ratio of anionic to nonionic will typically range from 10:90 to 95:5, more typically from 30:70 to 70:30.

Cationic Surfactants

[0097] Cationic surfactants are well known in the art and non-limiting examples of these include quaternary ammonium surfactants, which can have up to 26 carbon atoms. Additional examples include a) alkoxylate quaternary ammonium (AQA) surfactants as discussed in US 6,136,769; b) dimethyl hydroxyethyl quaternary ammonium as discussed in 6,004,922; c) polyamine cationic surfactants as discussed in WO 98/35002, WO 98/35003, WO 98/35004, WO 98/35005, and WO 98/35006; d) cationic ester surfactants as discussed in US Patents Nos. 4,228,042, 4,239,660 4,260,529 and US 6,022,844; and e) amino surfactants as discussed in US 6,221,825 and WO 00/47708, specifically amido propyl-dimethyl amine (APA).

Zwitterionic Surfactants

[0098] Non-limiting examples of zwitterionic surfactants include: derivatives of secondary and tertiary amines, derivatives of heterocyclic secondary and tertiary amines, or derivatives of quaternary ammonium, quaternary phosphonium or tertiary sulfonium compounds. See U.S. Patent No. 3,929,678 to Laughlin et al., issued December 30, 1975 at column 19, line 38 through column 22, line 48, for examples of zwitterionic surfactants; betaine, including alkyl dimethyl betaine and cocodimethyl amidopropyl betaine, C_8 to C_{18} (preferably C_{12} to C_{18}) amine oxides and sulfo and hydroxy betaines, such as N-alkyl-N,N-dimethylamino-1-propane sulfonate where the alkyl group can be C_8 to C_{18} , preferably C_{10} to C_{14} .

Ampholytic Surfactants

[0099] Non-limiting examples of ampholytic surfactants include: aliphatic derivatives of secondary or tertiary amines, or aliphatic derivatives of heterocyclic secondary and tertiary amines in which the aliphatic radical can be straight- or branched-chain. One of the aliphatic substituents contains at least about 8 carbon atoms, typically from about 8 to about

18 carbon atoms, and at least one contains an anionic water-solubilizing group, e.g. carboxy, sulfonate, sulfate. See U.S. Patent No. 3,929,678 to Laughlin et al., issued December 30, 1975 at column 19, lines 18-35, for examples of ampholytic surfactants.

Builders

[0100] The compositions may optionally comprise a builder, at levels of from 0.0% to 80% by weight, preferably from 5% to 70% by weight, more preferably from 20% to 60% by weight of the composition.

[0101] In general any known detergent builder is useful herein, including inorganic types such as zeolites, layer silicates, fatty acids and phosphates such as the alkali metal polyphosphates, and organic types including especially the alkali metal salts of citrate, 2,2-oxydisuccinate, carboxymethyloxysuccinate, nitrilotriacetate and the like. Phosphate-free, water-soluble organic builders which have relatively low molecular weight, e.g., below 1,000, are highly preferred for use herein. Other suitable builders include sodium carbonate and sodium silicates having varying ratios of SiO₂:Na₂O content, e.g., 1:1 to 3:1 with 2:1 ratio being typical.

[0102] Preferred are in particular C₁₂-C₁₈ saturated and/or unsaturated, linear and/or branched, fatty acids, but preferably mixtures of such fatty acids. Highly preferred have been found mixtures of saturated and unsaturated fatty acids, for example preferred is a mixture of rape seed-derived fatty acid and C₁₆-C₁₈ topped whole cut fatty acids, or a mixture of rape seed-derived fatty acid and a tallow alcohol derived fatty acid, palmitic, oleic, fatty alkylsuccinic acids, and mixtures thereof. Further preferred are branched fatty acids of synthetic or natural origin, especially biodegradable branched types.

[0103] Mixtures of any of these fatty acid builders can be advantageous to further promote solubility. It is known that lower chain length fatty acids promote solubility but this needs to be balanced with the knowledge that they are often malodorous, e.g., at chain lengths of C₉ and below.

[0104] While the term "fatty acid builder" is in common use, it should be understood and appreciated that as formulated in the present detergents, the fatty acid is in at least partially neutralized to neutralized form, the counter-ions can typically be alkanolamines, sodium, potassium, alkanolammonium or mixtures thereof. Preferably, the fatty acids are neutralized with alkanolamines such as Mono Ethanol Amine, and are fully soluble in the liquid phase. Fatty acids are preferred builders in the compositions of the present invention. It has been found that the presence of fatty acid builders contribute to the formation of a coacervate. The presence of fatty acids builder in the compositions of the present invention is therefore highly preferred.

Chelating Agents

[0105] The compositions herein may also optionally contain one or more iron and/or manganese chelating agents. Such chelating agents can be selected from the group consisting of amino carboxylates, amino phosphonates, polyfunctionally-substituted aromatic chelating agents and mixtures therein, all as hereinafter defined. Without intending to be bound by theory, it is believed that the benefit of these materials is due in part to their exceptional ability to remove iron and manganese ions from washing solutions by formation of soluble chelates.

[0106] Amino carboxylates useful as optional chelating agents include ethylenediaminetetracetates, N-hydroxyethyl-ethylenediaminetriacetates, nitrilotriacetates, ethylenediamine tetrapropionates, triethylenetetraaminehexacetates, diethylenetriaminepentaacetates, and ethanoldiglycines, alkali metal, ammonium, and substituted ammonium salts therein and mixtures therein.

[0107] Amino phosphonates are also suitable for use as chelating agents in the compositions of the invention when at least low levels of total phosphorus are permitted in detergent compositions, and include ethylenediaminetetrakis (methylenephosphonates) as DEQUEST. Preferred, these amino phosphonates to not contain alkyl or alkenyl groups with more than about 6 carbon atoms.

[0108] Polyfunctionally-substituted aromatic chelating agents are also useful in the compositions herein. See U.S. Patent 3,812,044, issued May 21, 1974, to Connor et al. Preferred compounds of this type in acid form are dihydroxydisulfobenzenes such as 1,2-dihydroxy-3,5-disulfobenzene. A preferred biodegradable chelator for use herein is ethylenediamine disuccinate ("EDDS"), especially the [S,S] isomer as described in U.S. Patent 4,704,233, November 3, 1987.

[0109] The compositions herein may also contain water-soluble methyl glycine diacetic acid (MGDA) salts (or acid form) as a chelant or co-builder useful with, for example, insoluble builders such as zeolites, layered silicates and the like.

[0110] If utilized, these chelating agents will generally comprise from about 0.1% to about 15% by weight of the detergent compositions herein. More preferably, if utilized, the chelating agents will comprise from about 0.1% to about 3.0% by weight of such compositions.

Brightener

[0111] Any optical brighteners or other brightening or whitening agents known in the art can be incorporated at levels typically from about 0.05% to about 1.2%, by weight, into the compositions herein.

[0112] Commercial optical brighteners which may be useful in the present invention can be classified into subgroups, which include, but are not necessarily limited to, derivatives of stilbene, pyrazoline, coumarin, carboxylic acid, methine-cyanines, dibenzothiophene-5,5-dioxide, azoles, 5- and 6-membered-ring heterocycles, and other miscellaneous agents. Examples of such brighteners are disclosed in "The Production and Application of Fluorescent Brightening Agents", M. Zahradnik, Published by John Wiley & Sons, New York (1982). Specific examples of optical brighteners which are useful in the present compositions are those identified in U.S. Patent 4,790,856, issued to Wixon on December 13, 1988. These brighteners include the PHORWHITE series of brighteners from Verona. Other brighteners disclosed in this reference include: Tinopal UNPA, Tinopal CBS and Tinopal 5BM; available from Ciba-Geigy; Artic White CC and Artic White CWD, available from Hilton-Davis, located in Italy; the 2-(4-styryl-phenyl)-2H-naphthol[1,2-d]triazoles; 4,4'-bis-(1,2,3-triazol-2-yl)-stil-benes; 4,4'-bis(styryl)biphenyls; and the aminocoumarins. Specific examples of these brighteners include 4-methyl-7-diethyl- amino coumarin; 1,2-bis-(benzimidazol-2-yl)ethylene; 1,3-diphenyl-phrazolines; 2,5-bis(benzoxazol-2-yl)thiophene; 2-styryl-naphth-[1,2-d]oxazole; and 2-(stilbene-4-yl)-2H-naphtho- [1,2-d]triazole. See also U.S. Patent 3,646,015, issued February 29, 1972 to Hamilton. Anionic brighteners are preferred herein.

Dye Transfer Inhibiting Agents

[0113] The compositions of the present invention may also include one or more dye transfer inhibiting agents. Suitable polymeric dye transfer inhibiting agents include, but are not limited to, polyvinylpyrrolidone polymers, polyamine N-oxide polymers, copolymers of N-vinylpyrrolidone and N-vinylimidazole, polyvinylloxazolidones and polyvinylimidazoles or mixtures thereof. When present in the cleaning compositions herein, the dye transfer inhibiting agents are present at levels from about 0.0001%, more preferably about 0.01%, most preferably about 0.05% by weight of the cleaning compositions to about 10%, more preferably about 2%, most preferably about 1% by weight of the cleaning compositions.

Enzymes

[0114] The compositions can comprise one or more detergent enzymes which provide cleaning performance and/or fabric care benefits. Examples of suitable enzymes include, but are not limited to, hemicellulases, peroxidases, proteases such as "Protease B" which is described in EP 0 251 446, cellulases, xylanases, lipases, phospholipases, esterases, cutinases, pectinases, keratanases, reductases, oxidases, phenoloxidases, lipoxxygenases, ligninases, pullulanases, tannases, pentosanases, malanases, β -glucanases, arabinosidases, hyaluronidase, chondroitinase, laccase, and amylases such as Natalase which is described in WO 95/26397 and WO 96/23873. Natalase and Protease B are particularly useful in liquid cleaning compositions. A preferred combination is a cleaning composition having a cocktail of conventional applicable enzymes like protease, lipase, cutinase and/or cellulase in conjunction with amylase. Enzymes can be used at their art-taught levels, for example at levels recommended by suppliers such as Novo and Genencor. Preferred levels in the compositions are from 0% to 5%, more preferably from 0.0001% to 5% by weight of the composition.

Enzyme Stabilizing System

[0115] Enzyme-containing, including but not limited to, liquid compositions, herein may comprise from about 0.001% to about 10%, preferably from about 0.005% to about 8%, most preferably from about 0.01 % to about 6%, by weight of an enzyme stabilizing system. Such stabilizing systems can, for example, comprise calcium ion, boric acid, propylene glycol, short chain carboxylic acids, boronic acids, and mixtures thereof, and are designed to address different stabilization problems depending on the type and physical form of the detergent composition. See US. 4,537,706 for a review of Borate stabilizers.

[0116] Suitable chlorine scavenger anions are widely known and readily available, and, if used, can be salts containing ammonium cations with sulfite, bisulfite, thiosulfite, thiosulfate, iodide, etc. Antioxidants such as carbamate, ascorbate, etc., organic amines such as ethylenediaminetetracetic acid (EDTA) or alkali metal salt thereof, monoethanolamine (MEA), and mixtures thereof can likewise be used. Other conventional scavengers such as bisulfate, nitrate, chloride, sources of hydrogen peroxide such as sodium perborate tetrahydrate, sodium perborate monohydrate and sodium percarbonate, as well as phosphate, condensed phosphate, acetate, benzoate, citrate, formate, lactate, malate, tartrate, salicylate, etc., and mixtures thereof can be used if desired.

Organic Catalyst

[0117] Applicants' cleaning compositions may contain a catalytically effective amount of organic catalyst. As a practical matter, and not by way of limitation, the compositions and cleaning processes herein can be adjusted to provide on the order of at least 0.001 ppm of organic catalyst in the washing medium, and will preferably provide from about 0.001 ppm to about 500 ppm, more preferably from about 0.005 ppm to about 150 ppm, and most preferably from about 0.05 ppm to about 50 ppm, of organic catalyst in the wash liquor. In order to obtain such levels in the wash liquor, typical compositions herein will comprise from about 0.0002% to about 5%, more preferably from about 0.001% to about 1.5%, of organic catalyst, by weight of the cleaning compositions.

[0118] In addition to organic catalysts, cleaning compositions may comprise an activated peroxygen source. Suitable ratios of moles of organic catalyst to moles of activated peroxygen source include but are not limited to from about 1:1 to about 1:1000. Suitable activated peroxygen sources include, but are not limited to, preformed peracids, a hydrogen peroxide source in combination with a bleach activator, or a mixture thereof. Suitable preformed peracids include, but are not limited to, compounds selected from the group consisting of percarboxylic acids and salts, percarbonic acids and salts, perimidic acids and salts, peroxymonosulfuric acids and salts, and mixtures thereof. Suitable sources of hydrogen peroxide include, but are not limited to, compounds selected from the group consisting of perborate compounds, percarbonate compounds, perphosphate compounds and mixtures thereof.

[0119] Suitable bleach activators include, but are not limited to, tetraacetyl ethylene diamine (TAED), benzoylcaprolactam (BzCL), 4-nitrobenzoylcaprolactam, 3-chlorobenzoylcaprolactam, benzoyloxybenzenesulphonate (BOBS), non-anoyloxybenzenesulphonate (NOBS), phenyl benzoate (PhBz), decanoyloxybenzenesulphonate (C₁₀-OBS), benzoyl-valerolactam (BZVL), octanoyloxybenzenesulphonate (C₈-OBS), perhydrolyzable esters, perhydrolyzable imides and mixtures thereof.

[0120] When present, hydrogen peroxide sources will typically be at levels of from about 1%, preferably from about 5% to about 30%, preferably to about 20% by weight of the composition.

[0121] If present, peracids or bleach activators will typically comprise from about 0.1%, preferably from about 0.5% to about 60%, more preferably from about 0.5% to about 40% by weight of the bleaching composition.

Electrolytes

[0122] Without being limited by theory, it is believed that the presence of electrolytes acts to control the viscosity of the liquid compositions. Thus, the liquid nature of the compositions herein are affected by the choice of surfactants and by the amount of electrolytes present. In preferred embodiments herein, the compositions will further comprise from 0% to about 10%, more preferably from about 2% to about 6%, even more preferably from about 3% to about 5%, of a suitable electrolyte or acid equivalent thereof. Sodium citrate is a highly preferred electrolyte for use herein.

[0123] The compositions herein may optionally contain from about 0% to about 10%, by weight, of solvents and hydrotropes. Without being limited by theory, it is believed that the presence of solvents and hydrotropes can affect the structured versus isotropic nature of the compositions. By "solvent" is meant the commonly used solvents in the detergent industry, including alkyl monoalcohol, di-, and tri-alcohols, ethylene glycol, propylene glycol, propanediol, ethanediol, glycerine, etc. By "hydrotrope" is meant the commonly used hydrotropes in the detergent industry, including short chain surfactants that help solubilize other surfactants. Other examples of hydrotropes include cumene, xylene, or toluene sulfonate, urea, C₈ or shorter chain alkyl carboxylates, and C₈ or shorter chain alkyl sulfate and ethoxylated sulfates.

Suds Suppressors

[0124] Compounds for reducing or suppressing the formation of suds can be incorporated into the compositions of the present invention. Suds suppression can be of particular importance in the so-called "high concentration cleaning process" as described in US 4,489,455 and 4,489,574 and in front-loading European-style washing machines.

[0125] A wide variety of materials may be used as suds suppressors, and suds suppressors are well known to those skilled in the art. See, for example, Kirk Othmer Encyclopedia of Chemical Technology, Third Edition, Volume 7, pages 430-447 (John Wiley & Sons, Inc., 1979). One category of suds suppressor of particular interest encompasses monocarboxylic fatty acid and soluble salts therein. See U.S. Patent 2,954,347, issued September 27, 1960 to Wayne St. John. The monocarboxylic fatty acids and salts thereof used as suds suppressor typically have hydrocarbyl chains of 10 to about 24 carbon atoms, preferably 12 to 18 carbon atoms. Suitable salts include the alkali metal salts such as sodium, potassium, and lithium salts, and ammonium and alkanolammonium salts.

[0126] The detergent compositions herein may also contain non-surfactant suds suppressors. These include, for example: high molecular weight hydrocarbons such as paraffin, fatty acid esters (e.g., fatty acid triglycerides), fatty acid esters of monovalent alcohols, aliphatic C₁₈-C₄₀ ketones (e.g., stearone), etc. Other suds inhibitors include N-alkylated amino triazines such as tri- to hexa-alkylmelamines or di- to tetra-alkyldiamine chlortriazines formed as products of

cyanuric chloride with two or three moles of a primary or secondary amine containing 1 to 24 carbon atoms, propylene oxide, and monostearyl phosphates such as monostearyl alcohol phosphate ester and monostearyl di-alkali metal (e.g., K, Na, and Li) phosphates and phosphate esters. The hydrocarbons such as paraffin and haloparaffin can be utilized in liquid form. Hydrocarbon suds suppressors are described, for example, in U.S. Patent 4,265,779, issued May 5, 1981 to Gandolfo et al.

[0127] Another preferred category of non-surfactant suds suppressors comprises silicone suds suppressors. This category includes the use of polyorganosiloxane oils, such as polydimethylsiloxane, dispersions or emulsions of polyorganosiloxane oils or resins, and combinations of polyorganosiloxane with silica particles wherein the polyorganosiloxane is chemisorbed or fused onto the silica. Silicone suds suppressors are well known in the art and are, for example, disclosed in U.S. Patent 4,265,779, issued May 5, 1981 to Gandolfo et al and European Patent Application No. 89307851.9, published February 7, 1990, by Starch, M. S.

Fabric Softeners

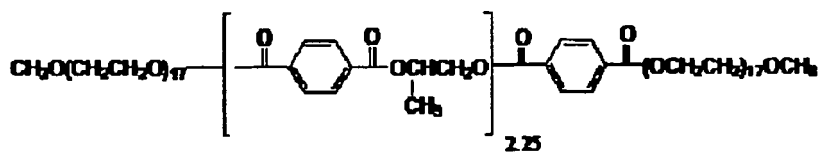
[0128] Various through-the-wash fabric softeners, especially the impalpable smectite clays of U.S. Patent 4,062,647, Storm and Nirschl, issued December 13, 1977, as well as other softener clays known in the art, can optionally be used typically at levels of from about 0.5% to about 10% by weight in the present compositions to provide fabric softener benefits concurrently with fabric cleaning. Clay softeners can be used in combination with amine and cationic softeners as disclosed, for example, in U.S. Patent 4,375,416, Crisp et al, March 1, 1983 and U.S. Patent 4,291,071, Harris et al, issued September 22, 1981.

Example 1 : compositions

[0129] Following compositions were made by mixing the listed ingredients in the listed proportions (weight % unless otherwise specified).

Ingredients	I	II	III	IV
C14-15 EO8	7	4	5	6
HLAS	6	7	10	2
AE3S	4	3	7	10
C12-15 E07-9	5	7	-	6
fatty acid	4	3	3	5
citric acid	5	2	2	3
DTPA	--	--	--	0.1
DTPMP	--	0.2	--	--
HEDP	--	--	0.2	0.1
polymer α	1.2	0.5	0.2	1.2
Silicone Suds Suppressor	0.0025	--	0.0025	0.0025
sodium polyacrylate copolymer	1.30	-	0.80	0.2
hydrogenated castor oil	--	0.3	0.10	0.20
Protease enzyme	0.7	--	0.4	0.7
Amylase enzyme	0.1	--	0.06	0.1
Cellulase enzyme	0.4	--	0.4	--
Mannanase enzyme	--	--	--	0.1
MEA Borate	2.5	--	1.5	2.0
sodium hydroxide	4.5	3.0	2.5	4.2
monoethanolamine	0.8	--	0.5	0.8
1,2-propanediol	1.7	4.0	1.2	1.8

(continued)

Ingredients	I	II	III	IV
glycerol	--	--	0.01	--
ethanol	1.70	--	0.75	1.20
dye, and perfume	--	0.50	0.50	0.75
water	balance	balance	balance	balance
DTPA is diethylenetriaminepentaacetic acid, sodium salt. DTPMP is diethylenetriaminepentamethylenephosphonic acid, sodium salt. HEDP is hydroxy ethyl-1,1-diphosphonic acid, sodium salt. Polymer α, commercially available from Clariant, is 				

Example 2 : Allergen repellency performance**A. Test method**

[0130] 5 pieces of Swatches of fabric (Polycotton fabric 1m x 1.5m) are preconditioned with 4 short cycles at 30°C (Miele WM 986) with composition A and with composition B.

[0131] Composition A = composition I without the presence of polymer α .

[0132] Composition B = composition I with the presence of polymer α .

[0133] House dust containing known amounts of allergens derived from dust mites, and cat & dog dander are used. The house dust is artificially spiked with the allergens and milled to get a homogeneous distribution of allergens. Both house dust and allergens are purchased from the Greer Laboratories Ltd.

[0134] The house dust is applied onto fabrics over a frame (0.3gr/circle). A weight is then applied onto the stain for 1 minute. The dust is then shaken off by placing the swatch up side down on top of a plastic beaker. The beaker is then stroked 3 times on the bench.

Quantification of Allergen Repellency**[0135]**

a) The differences in dust and allergen levels in fabric swatches pre-conditioned with detergent matrices treated with composition A and with composition B are quantified by Image Analysis and converted into Stain Removal Index (SRI) values.

b) After quantification of house dust/allergen repellency by image analysis, the allergens present on fabrics swatches are quantified using the protocol of "allergen quantification":

- Allergens are extracted from fabrics by overnight incubation in 30 ml of PBS-T (Phosphate Buffered Saline with Tween solution) containing 0.1 % BSA (Bovine Serum Albumin) at 10 °C under constant shaking at 50 rpm in a Heidolph Polymax 1040 incubator, followed by 10 minutes sonication in water-ice bath (using a Transistor/Ultrasonic T-9 sonicator bath).
- The fabric is then removed from the tube and the allergen extract is centrifuged at 3500 rpm for 10 min (Jouan C 312).
- The allergen-containing supernatant is collected for allergen quantification and filtered using for example a Millipore filter (0.45 μ m sterile puradisc 25AS polyethersulfone membrane with polypropylene housing).
- Clear allergen-containing supernatants are frozen and stored at -20°C.
- The above extracts are quantified via Enzyme Linked Immunoassay (ELISA) tests.
- Data of amount of each allergen is given in ng of allergen per ml of extract.

B. Results

[0136] a) Table 1 shows the stain removal index (SRI) of an allergenic dust stain applied onto fabrics swatches pre-conditioned with Composition A or B. Values are the mean and standard deviation of three different replicates for each detergent treatment.

Table 1

Treatment with :	SRI
Composition A (nil Polymer α)	35.0 ± 1.3
Composition B (with Polymer α)	60.3 ± 5.6

b) Table 2 shows the total amount of five different allergens remaining on fabric swatches pre-conditioned with Composition A or B after performing the repellency test and the protocol of "allergen quantification" described above.

"Unshaken" represents allergen levels in fabric swatches pre-conditioned with composition A (i.e. without Polymer α), inoculated with dust as described above, and kept unshaken to determine initial allergen levels in fabric; and "Shaken" represent allergen levels in fabric swatches pre-conditioned with A or B (i.e. without or with Polymer α), after performing the repellency test described above.

Allergen levels are quantified by the ELISA test method. Values are given as total ng allergen per fabric swatch. Values are the mean and standard deviation (SD) of three different replicates for each detergent treatment.

Table 2

Allergen	Mite feces				Mite body		Cat		Dog	
	Der p 1		Der f 1		Der 2		Fel d 1		Can f 1	
	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Treatment										
Compo. A UN-SHAKEN	29949.9	1860.4	39318.4	1849.4	43690.9	5864.1	11230.6	588.44	7489.6	471.93
Compos. A SHAKEN	969.7	205.6	3397.8	262.0	494.1	48.8	609.9	38.3	427.5	58.9
Compos. B SHAKEN	2.5	1.0	9.0	3.9	0.6	0.0	2.8	1.1	1.8	0.0

c) Table 3 shows the percentage of allergen released from fabric swatches pre-conditioned with compositions A or B (i.e. containing or not polymer α) after performing the repellency test described above. The percentage of allergen release is calculated using the following formula:

$$\% \text{ Allergen released from fabric} = \frac{(\text{Unshaken} - \text{Shaken})}{\text{Unshaken}} \times 100$$

[0137] Values indicate the mean and standard deviation of three different replicates for each detergent treatment.

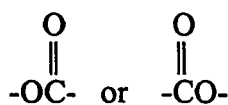
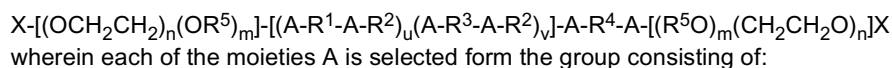
Table 3

Allergen	Mite feces				Mite body		Cat		Dog	
	Der p 1		Der f 1		Der 2		Fel d 1		Can f 1	
Treatment	Mean	SD	Mean	SD	Mean	SD	Mean	SD	Mean	SD
Compos. A	96.76	0.69	91.36	0.67	98.87	0.11	94.57	0.34	94.29	0.78
Compos. B	99.99	0.00	99.98	0.00	100.0	0.00	99.98	0.00	100.0	0.0

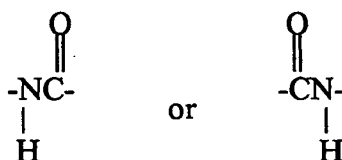
[0138] The above results clearly show that composition containing the polymer according to the present invention have a positive effect on allergen repellency. Indeed, the fabrics treated with the polymer of the present invention retain less allergen than fabric treated with composition not containing this polymer.

Claims

1. Use of a fabric treatment composition comprising a polymeric soil release agent for promoting repellency of allergens selected from animal dander and house dust mite allergens, from textiles.
2. Use of a fabric treatment composition according to claim 1 wherein the polymeric soil release agent has the formula (I) :



and combination thereof with either or both of the moieties,

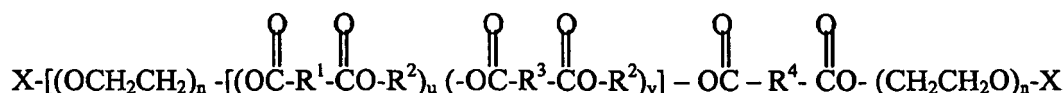


wherein :

- each of the R^1 moieties are 1,4-phenylene moieties, or are partially substituted with arylene, alkarylene, alkylene or alkenylene moieties, or mixtures thereof.
- the R^2 moieties are selected from the group consisting of ethylene moieties, substituted ethylene moieties having C_1 - C_4 alkyl or alkoxy substituents or mixtures thereof;

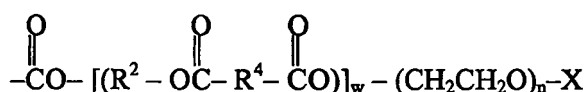
- the R³ moieties are substituted C₂-C₁₈ hydrocarbylene moieties having at least one - COOM, -O[(R⁵O)_m(CH₂CH₂O)_n]X or -A[(R²-A-R⁴-A)]_w[(R⁵O)_m(CH₂CH₂O)_n]X substituent;
- the R⁴ moieties are R¹ or R³ or mixtures thereof.
- each R⁵ is C₃-C₄ alkylene, or the moiety -R²-A-R⁶-, wherein R⁶ is a C₁-C₁₂ alkylene, alkenylene, arylene or alkarylene moiety;
- M is H or a water-soluble cation; each X is C₁-C₄ alkyl; m and n are number such that the moiety -(CH₂CH₂O)- comprise at least 50% by weight of the moiety [(R⁵O)_m(CH₂CH₂O)_n], provided that when R⁵ is the moiety -R²-A-R⁶-, m is 1; n is at least 10; u and v are numbers such that the sum of u+v is from 3 to 25; w is 0 or at least 1; and when w is at least 1, u, v and w are numbers such that the sum of u+v+w is from 3 to 25.

3. Use of a fabric treatment composition according to claim 1 wherein the soil release polymer has the formula (II) :



wherein:

- each R¹ moieties is a 1,4-phenylene moiety;
- the R² moieties are each selected from the group consisting of ethylene moieties, 1,2-propylene moieties, 1,2 butylene moieties, 1,2 hexylene moieties, 3-methoxy-1,2 propylene moieties or mixture thereof, provided that said R² are not exclusively 1,2 butylene moieties, 1,2 hexylene moieties, 3-methoxy-1,2 propylene moieties or mixture thereof;
- the R³ moieties are each selected from the group consisting of substituted 1,3-phenylene moieties having the substituent



at the 5 position; the R⁴ moieties are R¹ or R³ moieties, or mixtures thereof; each X is C₁-C₄ alkyl; each n is from 12 to 43; when w is 0, u+v is from 3 to 10; when w is at least 1, u+v+w is from 3 to 10.

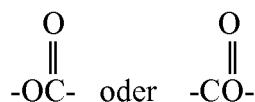
4. Use of a fabric treatment composition according to any of the preceding claims wherein the composition comprises from 0.01% to 20%, typically from 0.05% to 10%, preferably from 0.1% to 5%, and more preferably from 0.2% to 3 % by weight said polymeric soil release agents.
5. Use of a fabric treatment composition according to any of the preceding claims wherein the composition is a rinse-added fabric softening composition, a fabric finishing composition or a laundry detergent composition or any combination thereof; preferably the liquid fabric treatment composition is a liquid laundry detergent composition.
6. Use of a fabric treatment composition according to any of the preceding claims wherein the composition further comprises a surfactant system selected from nonionic and/or anionic and/or cationic surfactants and/or ampholytic and/or zwitterionic and/or semi-polar nonionic surfactants or mixtures thereof.
7. Use of a fabric treatment composition according to any of the preceding claims wherein the composition further comprises one or more additional components selected from the group consisting of deterative builders, enzymes, enzyme stabilizers, suds suppressors, soil suspending agents, pH adjusting agents, chelating agents, solvents, hydrotropes, phase stabilizers, structuring agents, dye transfer inhibiting agents, optical brighteners, perfumes, and mixtures thereof.
8. Use of a fabric treatment composition according to any of the preceding claims wherein the composition further comprises eucalyptus extracts.

9. Use of a fabric treatment composition according to any of the preceding claims wherein the composition further comprises a mix of green tea and eucalyptus perfumes.
10. A method for repelling allergen selected from animal dander and house dust mite allergens, from textiles by contacting the textiles with a fabric treatment composition containing the soil release polymer defined according to any of the preceding claims.

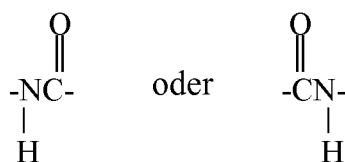
Patentansprüche

1. Verwendung einer Stoffbehandlungszusammensetzung, die ein polymeres Schmutzabweisemittel umfasst, um das Abweisungsvermögen von Allergenen, ausgewählt aus Tierschuppen- und Hausstaubmilbenallergenen, von Textilien zu fördern.
2. Verwendung einer Stoffbehandlungszusammensetzung nach Anspruch 1, wobei das polymere Schmutzabweisemittel die Formel (I) aufweist:

$$X-[(OCH_2CH_2)_n(OR^5)_m]-[(A-R^1-A-R^2)_u(A-R^3-A-R^2)_v]-A-R^4-A-[(R^5O)_m(CH_2CH_2O)_n]X$$
 wobei jede der Einheiten A ausgewählt ist aus der Gruppe bestehend aus:



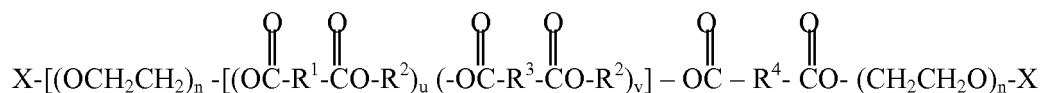
und Kombinationen davon mit einer oder beiden der Einheiten,



wobei:

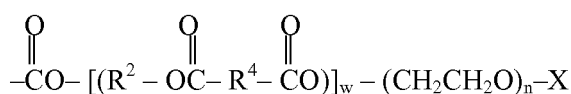
- alle R¹-Einheiten 1,4-Phenyleneinheiten sind oder teilweise mit Arylen, Alkarylen, Alkylen oder Alkenyleneinheiten oder Mischungen davon substituiert sind,
- die R²-Einheiten ausgewählt sind aus der Gruppe bestehend aus Ethyleneinheiten, substituierten Ethyleneinheiten mit C₁-C₄-Alkyl- oder Alkoxy-Substituenten oder Mischungen davon,
- die R³-Einheiten substituierte C₂-C₁₈-Hydrocarbyleneinheiten mit mindestens einem -COOM-, -O[(R⁵O)_m(CH₂CH₂O)_n]X- oder -A[(R²-A-R⁴-A)]_w[(R⁵O)_m(CH₂CH₂O)_n]X-Substituenten sind,
- die R⁴-Einheiten R¹ oder R³ oder Mischungen davon sind.
- jedes R⁵ C₃-C₄-Alkylen ist oder die Einheit -R²-A-R⁶- ist, wobei R⁶ eine C₁-C₁₂-Alkylen-, -Alkenylen-, -Arylen- oder -Alkaryleneinheit ist,
- M H oder ein wasserlösliches Kation ist; jedes X C₁-C₄-Alkyl ist; m und n solche Zahlen sind, dass die Einheit -(CH₂CH₂O)- mindestens 50 Gew.-% der Einheit [(R⁵O)_m(CH₂CH₂O)_n] ausmacht, vorausgesetzt, dass, wenn R⁵ die Einheit -R²-A-R⁶- ist, m 1 ist, n mindestens 10 ist, u und v solche Zahlen sind, dass die Summe von u+v von 3 bis 25 ist, w 0 oder mindestens 1 ist, und wenn w mindestens 1 ist, u, v und w solche Zahlen sind, dass die Summe von u+v+w von 3 bis 25 ist.

3. Verwendung einer Stoffbehandlungszusammensetzung nach Anspruch 1, wobei das Schmutzabweisepolymer die Formel (II) aufweist:



wobei:

- jede R¹-Einheit eine 1,4-Phenyleneinheit ist,
- die R²-Einheiten jeweils ausgewählt sind aus der Gruppe bestehend aus Ethyleneinheiten, 1,2-Propyleneinheiten, 1,2-Butyleneinheiten, 1,2-Hexyleneinheiten, 3-Methoxy-1,2-propyleneinheiten oder Mischungen davon, vorausgesetzt, dass das R² nicht ausschließlich 1,2-Butyleneinheiten, 1,2-Hexyleneinheiten, 3-Methoxy-1,2-propyleneinheiten oder Mischungen davon sind,
- die R³-Einheiten jeweils ausgewählt sind aus der Gruppe bestehend aus substituierten 1,3-Phenyleneinheiten mit dem Substituenten



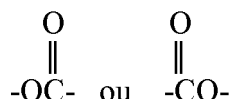
an der Position 5; die R⁴-Einheiten R¹- oder R³-Einheiten oder Mischungen davon sind; jedes X C₁-C₄-Alkyl ist; jedes n von 12 bis 43 ist; wenn w 0 ist, jedes u+v von 3 bis 10 ist; wenn w mindestens 1 ist, u+v+w von 3 bis 10 ist.

4. Verwendung einer Stoffbehandlungszusammensetzung nach einem der vorstehenden Ansprüche, wobei die Zusammensetzung zu 0,01 Gew.-% bis 20 Gew.-%, in der Regel zu 0,05 Gew.-% bis 10 Gew.-%, vorzugsweise zu 0,1 Gew.-% bis 5 Gew.-% und stärker bevorzugt zu 0,2 Gew.-% bis 3 Gew.-% die polymeren Schmutzabweismittel umfasst.
5. Verwendung einer Stoffbehandlungszusammensetzung nach einem der vorstehenden Ansprüche, wobei die Zusammensetzung eine dem Spülgang zugesetzte Stoffweichmacherzusammensetzung, eine Stoffausrüstungszusammensetzung oder eine Wäschewaschmittelzusammensetzung oder irgendeine Kombination davon ist, vorzugsweise ist die flüssige Stoffbehandlungszusammensetzung eine flüssige Wäschewaschmittelzusammensetzung.
6. Verwendung einer Stoffbehandlungszusammensetzung nach einem der vorstehenden Ansprüche, wobei die Zusammensetzung ferner ein Tensidsystem umfasst, das aus nichtionischen und/oder anionischen und/oder kationischen Tensiden und/oder ampholytischen und/oder zwitterionischen und/oder semipolaren nichtionischen Tensiden oder Mischungen davon ausgewählt ist.
7. Verwendung einer Stoffbehandlungszusammensetzung nach einem der vorstehenden Ansprüche, wobei die Zusammensetzung ferner einen oder mehrere zusätzliche Bestandteile umfasst, die ausgewählt sind aus der Gruppe bestehend aus Reinigungsbuildern, Enzymen, Enzymstabilisatoren, Schaumunterdrückern, Schmutzsuspendiermitteln, pH-Reglern, Komplexbildnern, Lösungsmitteln, hydrotropen Verbindungen, Phasenstabilisierungsmitteln, Strukturbildnern, Farbübertragungshemmern, optischen Aufhellern, Duftstoffen und Mischungen davon.
8. Verwendung einer Stoffbehandlungszusammensetzung nach einem der vorstehenden Ansprüche, wobei die Zusammensetzung ferner Eucalyptusextrakte umfasst.
9. Verwendung einer Stoffbehandlungszusammensetzung nach einem der vorstehenden Ansprüche, wobei die Zusammensetzung ferner eine Mischung aus Grüntee- und Eucalyptus-Duftstoffen umfasst.
10. Verfahren zum Abweisen von Allergenen, ausgewählt aus Tierschuppen- und Hausstaubmilbenallergenen, von Textilien durch Inkontaktbringen der Textilien mit einer Stoffbehandlungszusammensetzung, die das nach einem der vorstehenden Ansprüche definierte Schmutzabweisepolymer enthält.

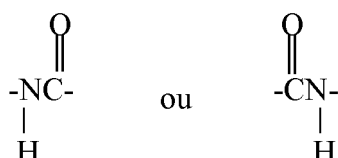
Revendications

- Utilisation d'une composition de traitement des tissus comprenant un agent polymère de libération des salissures pour promouvoir la répulsion d'allergènes choisis parmi le phanère d'animal et les allergènes d'acarien détriticoles domestiques, de textiles.
- Utilisation d'une composition de traitement des tissus selon la revendication 1, dans laquelle l'agent polymère de libération des salissures est de formule (I) :

$$X-[(OCH_2CH_2)_n(OR^5)_m]-[(A-R^1-A-R^2)_u(A-R^3-A-R^2)_v]-A-R^4-A-[(R^5O)_m(CH_2CH_2O)_n]X$$
 dans laquelle chacun des fragments A est choisi dans le groupe constitué de :



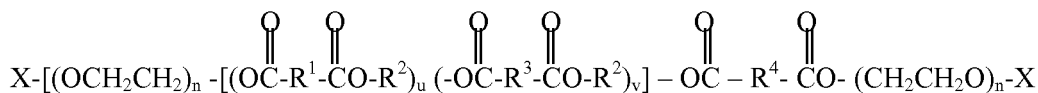
et une combinaison de ceux-ci avec l'un ou/et l'autre des fragments,



dans laquelle :

- chacun des fragments R^1 représente des fragments 1,4-phénylène, ou est partiellement substitué avec des fragments arylène, alkarylène, alkylène ou alcénylène, ou leurs mélanges.
- les fragments R^2 sont choisis dans le groupe constitué de fragments éthylène, fragments éthylène substitué ayant des substituants alkyle en C_1 à C_4 ou alcoxy ou leurs mélanges ;
- les fragments R^3 sont des fragments hydrocarbyle substitués en C_2 à C_{18} ayant au moins un substituant $-COOM$, $-O[(R^5O)_m(CH_2CH_2O)_n]X$ ou $-A[(R^2-A-R^4-A)]_w[(R^5O)_m(CH_2CH_2O)_n]X$;
- les fragments R^4 sont R^1 ou R^3 ou leurs mélanges.
- chaque R^5 est un alkylène en C_3 à C_4 , ou le fragment $-R^2-A-R^6-$, dans lequel R^6 est un fragment alkylène, alcénylène, arylène ou alkarylène en C_1 à C_{12} ;
- M est H ou un cation hydrosoluble ; chaque X est un alkyle en C_1 à C_4 ; m et n sont un nombre tel que le fragment $-(CH_2CH_2O)-$ comprend au moins 50 % en poids du fragment $[(R^5O)_m(CH_2CH_2O)_n]$, pour autant que lorsque R^5 est le fragment $-R^2-A-R^6-$, m soit 1 ; n est au moins 10 ; u et v sont des nombres tels que la somme de $u+v$ va de 3 à 25 ; w est 0 ou au moins 1 ; et lorsque w est d'au moins 1, u , v et w sont des nombres tels que la somme de $u+v+w$ va de 3 à 25.

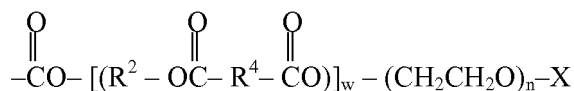
- Utilisation d'une composition de traitement des tissus selon la revendication 1, dans laquelle le polymère antisalissure est de formule (II) :



dans laquelle :

- chaque fragment R^1 est un fragment 1,4-phénylène ;
- les fragments R^2 sont chacun choisis dans le groupe constitué de fragments éthylène, fragments 1,2-propylène,

fragments 1,2-butylène, fragments 1,2-hexylène, fragments 3-méthoxy-1,2-propylène ou un mélange de ceux-ci, pour autant que lesdits R² ne soient pas exclusivement des fragments 1,2-butylène, des fragments 1,2-hexylène, des fragments 3-méthoxy-1,2-propylène ou un mélange de ceux-ci ;
 - les fragments R³ sont chacun choisis dans le groupe constitué de fragments 1,3-phénylène substitués ayant le substituant



à la position 5 ; les fragments R⁴ sont des fragments R¹ ou R³, ou leurs mélanges ; chaque X est un alkyle en C 1 à C4 ; chaque n va de 12 à 43 ; lorsque w est 0, u+v va de 3 à 10 ; lorsque w est au moins 1, u+v+w va de 3 à 10.

4. Utilisation d'une composition de traitement des tissus selon l'une quelconque des revendications précédentes, dans laquelle la composition comprend de 0,01 % à 20 %, typiquement de 0,05 % à 10 %, de préférence de 0,1 % à 5 %, et plus préférablement de 0,2 % à 3 % en poids desdits agents polymères de libération des salissures.
5. Utilisation d'une composition de traitement des tissus selon l'une quelconque des revendications précédentes, dans laquelle la composition est une composition d'adoucissement des tissus ajoutée au rinçage, une composition de finition des tissus ou une composition détergente pour le lavage du linge ou n'importe quelle combinaison de ceux-ci ; de préférence, la composition liquide de traitement des tissus est une composition détergente liquide pour le lavage du linge.
6. Utilisation d'une composition de traitement des tissus selon l'une quelconque des revendications précédentes, dans laquelle la composition comprend en outre un système tensioactif choisi parmi les agents tensioactifs non ioniques et/ou anioniques et/ou cationiques et/ou des agents tensioactifs ampholytiques et/ou zwitterioniques et/ou non ioniques semi-polaires ou leurs mélanges.
7. Utilisation d'une composition de traitement des tissus selon l'une quelconque des revendications précédentes, dans laquelle la composition comprend en outre un ou plusieurs composants supplémentaires choisis dans le groupe constitué d'adjuvants détersifs, enzymes, agents stabilisant les enzymes, supprimeurs de mousse, agents de suspension des salissures, agents d'ajustement du pH, agents chélatants, solvants, hydrotropes, stabilisants de phase, agents structurants, agents inhibant la décoloration, azurants optiques, parfums, et leurs mélanges.
8. Utilisation d'une composition de traitement des tissus selon l'une quelconque des revendications précédentes, dans laquelle la composition comprend en outre des extraits d'eucalyptus.
9. Utilisation d'une composition de traitement des tissus selon l'une quelconque des revendications précédentes, dans laquelle la composition comprend en outre un mélange de parfums de thé vert et d'eucalyptus.
10. Procédé de répulsion d'un allergène choisi parmi le phanère d'animal et les allergènes d'acarien détritique domestiques, de textiles par une mise en contact des textiles avec une composition de traitement des tissus contenant le polymère antisalissure défini selon l'une quelconque des revendications précédentes.

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