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(54) Perfume compositions

(57) There is provided a laundry and cleaning composition comprising a bleaching system and a selected perfume composition, wherein the perfume composition comprises perfume ingredients selected from the classes of unsaturated perfume ingredients of ester, ether, alcohol, aldehyde, ketone, nitrile, lactone, schiff-bases, terpenes and derivatives thereof, cyclic alkene, cyclic oxide, oxime, and mixtures thereof. Also provided herein is the perfume composition, wherein the amount of unsaturated materials represents at least 40% by weight of the perfume composition.

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Description

Field of the invention

[0001] The present invention relates to perfume compositions, in particular to laundry and cleaning compositions incorporating such perfume compositions together with a bleaching system.

Background of the invention

[0002] Most consumers have come to expect scented detergent products and to expect that fabrics and other items which have been laundered with these products also have a pleasing fragrance. Further, perfumes by their ability to provide an olfactory aesthetic benefit can serve as a signal of cleanliness.

[0003] Therefore, it is desirable and commercially beneficial to add perfume materials to such products. Perfume additives make laundry compositions more aesthetically pleasing to the consumer, and in some cases the perfume imparts a pleasant fragrance to fabrics treated therewith. However, the amount of perfume carry-over from an aqueous laundry bath onto fabrics is often marginal. Indeed, a problem encountered with perfumes is their volatility and many perfume ingredients can be destroyed or damaged in the presence of cleaning ingredients, especially alkali and bleaching system.

[0004] Bleaching systems like the peroxyacid, and more particularly the preformed peroxyacid, are known in the art as effective soil removal agents.

[0005] The Applicants have now found that the problem of perfume oxidation may be particularly troublesome with a bleaching system like the peroxyacid, and more particularly the preformed peroxyacid.

[0006] Still, it has also been found that another problem with the formulation of perfumed laundry and cleaning composition incorporating a bleaching system is the tendency of the bleach, in particular with the peroxyacid, and more particularly with the preformed peroxyacid, to show a loss of their activity in the presence of perfume ingredients.

[0007] One solution to this problem is encapsulation of the perfume. This increases the expense and complexity of the formulation and does not always provide sufficient protection.

[0008] Another solution is to use fully saturated perfume as taught by EP-0,299,561. Indeed, saturated perfumes have long been known and extensively used in the perfumery art. One of the reason for their extensive use is their good performance in term of stability and odor performance. However, notwithstanding the advance in the art represented by the above disclosure, there is still a need for further perfume compositions that would provide stabilised perfume in a bleach containing environment.

[0009] Another solution to this problem is the reduction in the level of the bleach system. Whilst reducing the level of the bleach system employed in the wash tends to ameliorate these problems, this is accompanied by a marked negative effect on the soil removal ability.

[0010] The detergent formulator thus faces the challenge of formulating a product which maximises soil/stain removal, whilst avoiding degradation of the perfume components and/or loss of the activity of the bleaching system.

[0011] The Applicants have now surprisingly found that the provision of specific classes of perfume raw materials fulfills such a need.

[0012] It is therefore an object of the present invention to provide compositions suitable for use in laundry washing methods which produces an excellent perfume fragrance on fabrics as well as an excellent bleaching profile in the wash liquor and in the product during storage, in particular where such a bleaching system is a preformed peroxyacid.

[0013] It is a further object of the invention to provide compositions suitable for use in laundry washing methods which produce effective soil removal.

[0014] It is also an object of the present invention to provide a perfumed composition as well as laundry composition thereof containing a bleaching system, wherein the perfume is stable in the presence of a bleaching system whilst not being detrimental to the performance of either the perfume or the bleaching system.

Summary of the invention

[0015] There is provided a perfume composition comprising perfume ingredients which have a bleach stability index of at least 80%, and/or an odour character of value A or B with an odour intensity of at least 6, and selected from the classes of unsaturated perfume ingredients of ester, ether, alcohol, aldehyde, ketone, nitrile, lactone, schiff-bases, terpenes and derivatives thereof, cyclic alkene, cyclic oxide, oxime, and mixtures thereof, wherein the amount of unsaturated materials represents at least 40% by weight of the perfume composition.

[0016] In another aspect of the invention, a laundry and cleaning composition comprising a bleaching system and a perfume composition comprising perfume ingredients which have a bleach stability index (BSI) of at least 80% and/or an odour character of value A or B with an odour intensity of at least 6, and selected from the classes of unsaturated perfume ingredients of ester, ether, alcohol, aldehyde, ketone, nitrile, lactone, schiff-bases, terpenes and derivatives thereof, cyclic alkene, cyclic oxide, oxime, and mixtures thereof.

Detailed description of the invention

Perfume composition

[0017] One essential feature of the perfume composition invention is that the unsaturated perfume ingredient have a bleach stability index (BSI) of at least 80% and/or an odour character of value A or B with an odour intensity of at least 6.

[0018] By bleach stability index (BSI) of at least 80%, it is meant that the composition incorporating each of the tested perfume ingredient in a bleach containing matrix does not exhibit more than 20% AvO loss after 2 weeks at 40°C, preferably not more than 15%, more preferably not more than 10%, and most preferably not more than 5%. For this test, the pure perfume chemicals to be tested were diluted at 0.2% via a solubiliser, namely C10-C18 sodium alkyl sulfate condensed with an average of three moles of ethylene oxide (AE3S), then incorporated in a finished product and then subjected to the accelerated aging test. The accelerated aging test is set up as follows:
15 to 20g of each of the finished product incorporating the perfume ingredient was taken and placed in an oven for 2 weeks at 40°C. The aged samples were compared versus freshly made perfumed product (The reference) by measuring the AvO before storage from the reference and after storage from the aged product and expressing the difference in AvO as % loss. The unperfumed finished product formulation for testing is as follows:

Composition	% by weight
PAP	3
Carbopol ETD 2691	0.3
Xanthan gum	0.2
Alkyl 3 ethoxy sulphate	2
HEDP	0.1
water to balance to 100%	
pH	3.8

[0019] The definition of the abbreviated terms are given hereafter before the examples.

[0020] The loss of available oxygen (AvO) of a bleach-containing composition over time can be measured with the iodometric titration method in which the bleach is reduced by excess potassium iodide and the iodine formed is determined by titration with sodium thiosulphate. This method is well known in the art and is reported for example in A Bleachers Handbook by and available from Interox. Alternatively peracid concentration can also be measured using a chromatography method described in the literature for peracids (F. Di Furia et al., Gas-liquid Chromatography Method for Determination of Peracids, Analyst, Vol 113, May 1988, p 793-795).

[0021] Still another essential feature of the invention is that the perfume ingredients also exhibit a good impact and aging character profile. By good character impact and aging, it is meant that each of the unsaturated perfume ingredients have an odour character of value A or B and an odour intensity of at least 6 as per defined in the test below:

Odor Intensity Index method

[0022] By Odor Intensity Index, it meant that the pure perfume chemicals to be tested were diluted at 0.2% via a solubiliser, namely C_{10}-C_{18} sodium alkyl sulfate condensed with an average of three moles of ethylene oxide (AE3S), then incorporated in a finished product and stored for 24hours at room temperature. This percentage is more representative of usage levels. The unperfumed finished product formulation is as above for the BSI test.

[0023] After the above mentioned 24 hours storage at room temperature, each of the product containing the perfume ingredient and the unperfumed product were then presented to the expert panellist for odor evaluation in plastic cups. Expert panellists are assessors trained for at least six months in odor grading and whose gradings are checked for accuracy and reproducibility versus a reference on an on-going basis. For each perfume ingredient, the panellist was presented two products: one reference (unperfumed product) and the sample. The panellist was asked to rank both sample products on the 2-9 odor intensity scale, 2-4 being no perfume detected with only base odor, 9 being very strong odor present with no base odor. The scale is as follows:

ODOR INTENSITY SCALE

Grade	Description	
9	Very strong perfume impact	No base odor
8	Strong perfume impact	No base odor
7	Moderate perfume impact	Slight base odor
6	Weak perfume impact	Moderate base odor
5	Very weak perfume impact	Strong base odor
2-4	No perfume perceptible	Only base odor

[0024] In addition, the panellist was asked to rank both smelling strips on the A-D odor character scale, A being no change in odor character, D being unpleasant odor character. The scale is as follows:

ODOR CHARACTER CHANGE SCALE

Grade	Description
A	No change in odor character
B	Slight change / perfume character still recognizable
C	Significant change / perfume character no longer recognizable
D	Unpleasant odor character

[0025] Of the assessed perfume ingredients, only those which were assessed with an odor character change of value A or B and an odour intensity of at least 6 were kept, and further submitted to the accelerated aging test described hereinafter: 15 to 20g of the finished product incorporating the perfume ingredient was taken and placed in an oven for 2 weeks at 40°C. The aged samples were compared versus a reference comprising 15 to 20g of finished product incorporating the same perfume ingredient but stored at room temperature for 2 weeks.

[0026] After the two weeks of accelerated aging testing, the samples were evaluated for odor character change and odor intensity as per above mentioned method.

[0027] Preferred unsaturated perfume ingredients are those which still have an odor character of value A or B and an odour intensity of at least 6 after the accelerated aging test.

[0028] Still another essential feature of the perfume composition invention as is is that, the perfume composition contains an amount of unsaturated perfume ingredient of at least 40%, preferably 50%, and more preferably of at least 70% by weight of the perfume composition.

[0029] When the perfume is used in a bleaching composition, the perfume composition will preferably contain an amount of unsaturated perfume ingredient of greater than 20%, preferably of at least 50%, and most preferably of at least 70% by weight of the perfume composition.

[0030] The classes of unsaturated perfume ingredient are selected from ester, ether, alcohol, aldehyde, ketone, nitrile, lactone, schiff-bases, terpenes and derivatives thereof, cyclic alkene, cyclic oxide, oxime, and mixtures thereof.

[0031] Preferred perfume ingredients are those which fulfill all of the requirement of BSI, character intensity and aging performance from the above mentioned class. Some non-limiting examples are as follows:

i)-Class of ester:

Preferred esters are compound of the classes selected from alicyclic ester, aliphatic ester, cyclic ester, aromatic ester, and mixtures thereof.

A suitable alicyclic ester compound for use herein is ethyl 2,6,6-trimethyl-1,3-cyclohexdiene-1-carboxylate (Ethyl safranate as supplied by Quest). Suitable aliphatic ester compounds for use herein are selected from cis-beta-gamma-hexenyl acetate (Cis 3 hexenyl acetate as supplied by Mitsui), 2-methylbuten-2-ol-4-acetate (Prenyl acetate as supplied by IFF); glycolic acid, 2-pentyloxy:allyl ester, methyl-2-nonenoate (Beauvertate as supplied by Quest), cis-beta-gamma-Hexenyl salicylate, 4-methyl-pentan-2-ol 2-butenoate (Frutinat.exp as supplied by H&R), hexyl 2-butenoate (Hexyl crotonate as supplied by H&R), acetyl diisoamylene (koavone as supplied by IFF), 3-methylene-7-methyl-1-octen-7-yl acetate (Myrcenyl acetate crude as supplied by Quest), methyl 2-nonenoate, citronellyl acetate, isobutyl angelate, and mixtures thereof.

Suitable cyclic ester compounds are selected from tricyclo decenyl acetate (Flor acetate as supplied by IFF), tricyclo decenyl propionate (Frutene as supplied by IFF), 7-Acetyl, 1,2,3,4,5,6,7,8-octahydro-1,1,6,7-tetramethyl naphtalene (iso E super as supplied by IFF), ethyl 2-ethyl-6,6-dimethyl-2-cyclohexenecarboxylate & Ethyl 2,3,6,6-tetramethyl-2-cyclohexenecarboxylate (givescone as supplied by Givaudan-Roure), allyl cyclohexyloxy acetate (isoananat 660567 as supplied by H&R), 4(3)-(4-Methyl-3-pentenyl)-3-cyclohexenyl-methyl acetate, 2-cyclopentyl-cyclopentyl 2-butenoate, datilat from H&R, and mixtures thereof.

ii)-Class of ether

Preferred ethers are compounds of the classes selected from alicyclic ether, cyclic ether, aromatic ether, and mixtures thereof.

Suitable alicyclic ether compounds for use herein are selected from 6-Butyl-3,6-dihydro-2,4-dimethyl-2-hydropyran (Gyrane), 3, 6-dihydro-4, 6-dimethyl-2-phenyl-2hydro-pyran (Pelargene), and mixtures thereof.

A suitable cyclic ether compounds is 9-(Methyloxy)tricyclo[5,2,1,0$^{2.6}$]dec-3-ene.

iii)-Class of alcohol

Preferred alcohols are compounds of the classes selected from primary alcohols, tertiary alcohols, aromatic alcohols, cyclic alcohols, and mixtures thereof.

Suitable primary alcohol compounds are selected from beta gamma hexenol, 3,7-dimethyl-6-octen-1-ol (citronellol), cis-3-hexenol, 9-Decen-1-ol (rosalva as supplied by IFF), geraniol, and mixtures thereof.

Suitable tertiary alcohol compounds are selected from 2,6-dimethyl-7-octen-2-ol (Dihydro myrcenol as supplied by IFF), 3,7-Dimethyl-1,6-octadien-3-ol (Linalool as supplied by BASF), 4-Methyl-3-decen-5-ol (undecavertol as supplied by Givaudan-Roure), amyl vinyl carbinol from IFF, and mixtures thereof.

Suitable aromatic alcohol compounds are selected from 3-Phenyl-2-propen-1-ol, 2-Methyl-4-phenyl-1-pentanol, and mixtures thereof.

Suitable cyclic alcohol compounds are selected from 2-Ethyl-4-(2,2,3-trimethyl-3-cyclopenten-1-yl)-2-buten-1-ol (Sanjinol as supplied by IFF) , 4,7-Methano-1H-inden-5-ol, 3a,4,5,6,7,7a-Hexahydro-2(or 3), 4-dimethyl, dimethyl cyclohexene methanol (Floralol as supplied by IFF), 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol (Sandalore as supplied by Givaudan-Roure), 1-Para-Menthen-4-ol, terpineol, ambrinol L20 from Takasago, and mixtures thereof.

iv)-Class of aldehyde

Preferred aldehydes are compounds of the classes selected from aliphatic aldehyde, cyclic aldehydes, aliphatic primary aldehyde, aromatic aldehydes, tertiary aldehydes, and mixtures thereof.

A suitable aliphatic aldehyde for use herein is 3,7-Dimethyl-6-octen-1-al (Citronellal as supplied by Reynaud).

Suitable cyclic aldehydes for use herein are selected from 2-Methl-4(2,6,6-trimethyl-1-cyclohexenyl-)2-butenal (Boronal as supplied by H&R), 1-Methyl-4-(4-methylpentyl)-3-cyclohexenecarbaldehyde, and mixtures thereof.

v)-Class of ketone

Preferred ketones are compounds of the classes selected from aliphatic ketones, aromatic ketones, cyclic ketones, macrocyclic ketones, and mixtures thereof.

A suitable aliphatic ketone for use herein is 2,7-Dimethyloct-5-en-4-one 50% in Iso Propyl Myristate (isotagetone 50 as supplied by BBA).

A suitable aromatic ketone for use herein is Hexahydro Tetramethyl Methanonaphtalenone.

Suitable cyclic ketones for use herein are selected from 4-Penten-1-one,1-(5,5-dimethyl-1-cyclohexen-1-yl)-(Neobutenone 10% as supplied by Firmenich), 5,8-Methano-2H-1-benzopyran, 6-ethylideneoctahydro-, 2-Buten-1-one, 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)- (alpha-damascone as supplied by Firmenich) , Diethyl dimethylcyclohex-2-en-1-one (Two isomers), 2-Buten-1-one, 1-(2,6,6-trimethyl-1-cyclohexen-1-yl)-, 2,5,10-Trimethyl-2,5,9-cyclododecatrien-1-yl methyl ketone & isomers (trimofix o as supplied by IFF), Methyl cedr-8-enyl ketone (Vertofix coeur as supplied by IFF), and mixtures thereof.

A suitable macrocyclic ketone for use herein is Oxacyclohexadecen-2-one (habanolide 100% as supplied by Firmenich).

vi)-Class of nitriles

Preferred nitriles are compounds of the classes selected from aliphatic nitrile, aromatic nitrile, cyclic nitrile, and mixtures thereof.

Suitable aliphatic nitriles are selected from 3,7-dimethyl-2,6-octadienenitrile, 3,12-tridecadiene nitrile, iris nitrile, ozonil, teamonyl, and mixtures thereof.

Suitable aromatic nitriles are selected from 5-Phenyl-3-methyl-penten-2-acid-nitrile, 2-Benzyl-2-methyl-3-butenenitril, and mixtures thereof.

A suitable cyclic nitrile for use herein is a mixture of 3-(4,7,7-Trimethylcicyclo(4.1.0)hept-3-ylidene)-propanenitrile and 3-(4,7,7-Trimethylcicyclo(4.1.0)hept-3-ylidene)-propenenitrile (rose nitrile as supplied by PFW).

vii)-Class of lactones

A suitable lactone is 1,2-benzopyrone (coumarin as supplied by Rhodia).

viii)-Class of Schiff-Bases

Suitable Schiff-bases for use herein are selected from Methyl 2-((-1-(2, 4-dimethyl-3-cyclohexenyl)methylidene)amino)-1-benzenecarboxylate (ligantraal as supplied by Quest), Methyl 2-((-2-methylpentylidene)amino)-1-benzenecarboxylate (mevantraal (q) as supplied by Quest), and mixtures thereof.

ix)-Class of terpene and derivatives thereof

Suitable terpenes for use herein are selected from Dimethyl-2-Methylene Bicyclo(3,1,1) Heptane (6,6-) (beta pinene as supplied by IFF), Para-Mentha-1,4(8)-diene (terpinolene as supplied by BBA), and mixtures thereof.

Still other unsaturated perfume ingredients for use herein which fulfill the BSI requirement of at least 80% include the following perfume ingredients: geranyl nitrile from BASF, hexyl cinnamic aldehyde from COURTAULDS, maceal from QUEST, methyl cedrylone from BORDAS, rhuboflor from FIRMENICH, allyl amyl glycolate from I.F. F., azarbre from QUEST, calyxol from QUEST, cinnamic alcohol from H & R, citrowanil b from FRAGR. RES., diantheme from H & R, dimethyl-cyclormol from I.F.F., ionone alpha from I.F.F., ionone beta from GIV-ROURE, iso jasmone from GIV-ROURE, iso longifolanone from QUEST, lyral from I.F.F., mandaril 600 135 from H & R, myraldyl acetate from GIV-ROURE, neofolione from GIV-ROURE, pamplefleur from I.F.F., paxamber from I.F.F, prenyl salicylate from FRAGR. RES, pyroprunat from H & R, stemone from GIV-ROURE, terpinenol from DRAGOCO, undecylenic aldehyde from GIV-ROURE, verdalia a from I.F.F., vernaldehyde from GIV-ROURE, ambretone from TAKASAGO, bergamal from I.F.F., bergoxane from PFW, cantryl from DRAGOCO, citrathal s tw from QUEST, decave from I.F.F., dihydro jasmone from QUEST, fleuroxene extra from QUEST, florasantol .exp from TAKASAGO, galbanolene super from FIRMENICH, gardocyclene from QUEST, iso butavan from QUEST, linalyl acetate from GIV-ROURE, from I.F.F., malusate from B.B.A., melafleur from I.F.F., octenyl acetate from I.F.F., prismantol from I.F.F., prismylate from I.F.F., profarnesal from H & R, roseate from I.F.F., silwanol from FRAGR. RES., tetrameran from I.F.F., violiff from I.F.F., plinol special from MILLENIUM, plinyl acetate from MILLENIUM, trans-2-hexenal from MILLENIUM, trans-2-hexenol from MILLENIUM, karlenol from MILLENIUM, karlenyl acetate from MILLENIUM, and mixtures thereof.

[0032] Of course, mixtures of the above ingredients are also encompassed within the scope of the present invention.

Laundry and cleaning composition

[0033] In another aspect of the invention, the perfume composition of the invention is incorporated in a laundry and cleaning composition, in particular a bleaching composition comprising a bleaching system. Typical levels of incorporation of the perfume composition are of from 0.01% to 10%, preferably from 0.05% to 5%, and more preferably from 0.1% to 3%, by weight of the laundry and cleaning composition.

[0034] Laundry and cleaning compositions include compositions which are typically used for laundering fabrics and cleaning hard surfaces such as dishware, floors, bathrooms, toilet, kitchen and other surfaces in need of a cleaning. Accordingly, by laundry and cleaning compositions, these are to be understood to include not only detergent compositions which provide fabric cleaning benefits, but also compositions such as hard surface cleaning which provide hard surface cleaning benefit.

[0035] Preferred are those laundry compositions which incorporate a bleaching system.

[0036] Incorporation of the perfume in the laundry and cleaning compositions can conveniently be carried out, if necessary, by conventional incorporation means, such as by spray-on for granular compositions or emulsification for liquid compositions.

Bleaching system

[0037] The laundry and cleaning compositions of the invention comprises a bleaching system. Preferably the bleaching system is selected from:

i)-a source of hydrogen peroxide in combination with an organic peroxyacid bleach precursor compound;
ii)-a preformed organic peroxyacid,
iii)-a halogen bleach component;
iv)-persulfate salts; and
v)-mixtures thereof.

[0038] In a preferred embodiment of the invention, the bleaching system is capable of providing organic peroxyacid bleach to a wash solution.

[0039] In one preferred execution the bleaching system contains a hydrogen peroxide or a source thereof and an organic peroxyacid bleach precursor compound. The production of the organic peroxyacid occurs by an in situ reaction of the precursor with hydrogen peroxide or a source thereof. Preferred sources of hydrogen peroxide include inorganic perhydrate bleaches. In an alternative preferred execution a preformed organic peroxyacid is incorporated directly into the composition. Compositions containing mixtures of a hydrogen peroxide source and organic peroxyacid precursor in combination with a preformed organic peroxyacid are also envisaged.

i)-a source of hydrogen peroxide in combination with an organic peroxyacid bleach precursor compound;

Inorganic perhydrate bleaches

[0040] Inorganic perhydrate salts are a preferred source of hydrogen peroxide. These salts are normally incorporated in the form of the alkali metal, preferably sodium salt at a level of from 1% to 40% by weight, more preferably from 2% to 30% by weight and most preferably from 5% to 25% by weight of the compositions.

[0041] Examples of inorganic perhydrate salts include perborate, percarbonate, perphosphate, persulfate and persilicate salts. The inorganic perhydrate salts are normally the alkali metal salts. The inorganic perhydrate salt may be included as the crystalline solid without additional protection. For certain perhydrate salts however, the preferred executions of such granular compositions utilize a coated form of the material which provides better storage stability for the perhydrate salt in the granular product.

[0042] Suitable inorganic perhydrate salts include perborate bleaches, e.g., sodium perborate (e.g., mono- or tetrahydrate), sodium carbonate peroxyhydrate and equivalent "percarbonate" bleaches, sodium pyrophosphate peroxyhydrate, urea peroxyhydrate, and sodium peroxide.

[0043] A preferred percarbonate bleach comprises dry particles having an average particle size in the range from 500 micrometers to 1,000 micrometers, not more than 10% by weight of said particles being smaller than 200 micrometers and not more than 10% by weight of said particles being larger than 1,250 micrometers. Optionally, the percarbonate can be coated with silicate, borate or water-soluble surfactants. Percarbonate is available from various commercial sources such as FMC, Solvay and Tokai Denka.

[0044] Peroxygen bleaching agents, the perborates, the percarbonates, etc., are combined with bleach activators, which lead to the *in situ* production in aqueous solution (i.e., during the washing process) of the peroxy acid corresponding to the bleach activator. Peroxyacid bleach precursor compounds are preferably incorporated at a level of from 0.5% to 20% by weight, more preferably from 1% to 15% by weight, most preferably from 5% to 10% by weight of the cleaning compositions.

[0045] Various non-limiting examples of activators are disclosed in U.S 4,915,854, and U.S 4,412,934. The nonanoyloxybenzene sulfonate (NOBS), 3,5,5-tri-methyl hexanoyl oxybenzene sulfonate (ISONOBS), tetraacetyl ethylene diamine (TAED), acetyl triethyl citrate (ATC) activators are typical, and mixtures thereof can also be used. See also U. S. 4,634,551 for other typical bleaches and activators useful herein.

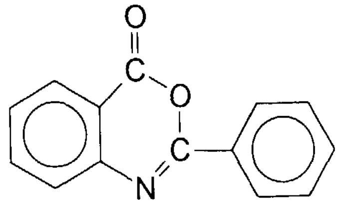
[0046] Highly preferred amido-derived bleach activators are those of the formulae:

$$R^1N(R^5)C(O)R^2C(O)L \qquad \text{or} \qquad R^1C(O)N(R^5)R^2C(O)L$$

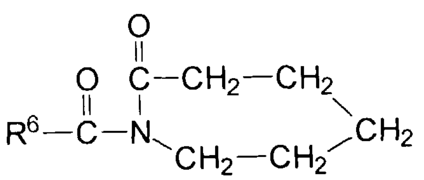
wherein R^1 is an alkyl group containing from 6 to 12 carbon atoms, R^2 is an alkylene containing from 1 to 6 carbon atoms, R^5 is H or alkyl, aryl, or alkaryl containing from 1 to 10 carbon atoms, and L is any suitable leaving group. A leaving group is any group that is displaced from the bleach activator as a consequence of the nucleophilic attack on the bleach activator by the perhydrolysis anion. A preferred leaving group is phenyl sulfonate.

[0047] Preferred examples of bleach activators of the above formulae include (6-octanamido-caproyl)oxybenzenesulfonate, (6-nonanamidocaproyl)oxybenzene sulfonate, (6-decanamido-caproyl)oxybenzenesulfonate, and mixtures thereof as described in U.S. Patent 4,634,551, incorporated herein by reference.

[0048] Another class of bleach activators comprises the benzoxazin-type activators disclosed by Hodge et al in U. S. Patent 4,966,723. A highly preferred activator of the benzoxazin-type is:



[0049] Still another class of preferred bleach activators includes the acyl lactam activators, especially acyl caprolactams and acyl valerolactams of the formulae:



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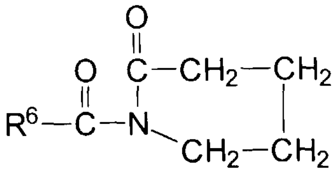


wherein R^6 is H or an alkyl, aryl, alkoxyaryl, or alkaryl group containing from 1 to 12 carbon atoms. Highly preferred lactam activators include benzoyl caprolactam, octanoyl caprolactam, 3,5,5-trimethylhexanoyl caprolactam, nonanoyl caprolactam, decanoyl caprolactam, undecenoyl caprolactam, benzoyl valerolactam, octanoyl valerolactam, decanoyl valerolactam, undecenoyl valerolactam, nonanoyl valerolactam, 3,5,5-trimethylhexanoyl valerolactam and mixtures thereof. See also U.S. Patent 4,545,784, issued to Sanderson, October 8, 1985, incorporated herein by reference, which discloses acyl caprolactams, including benzoyl caprolactam, adsorbed into sodium perborate.

ii)-a preformed organic peroxyacid,

[0050] Another category of bleaching agent that can be used without restriction encompasses preformed organic peroxyacid (hereafter referred to as peracid), like percarboxylic acid bleaching agents and salts thereof. The term organic peracid bleach, as used herein, includes the organic peroxyacids and their salts, which are well described in the literature as having the ability of effective bleaching at lower wash temperatures of about 20°-60°C. Typical levels of incorporation are of from 0.1% to 30%, more preferably from 0.5% to 18% and most preferably 1% to 12% by weight of the composition.

[0051] Any suitable peracid known in the art may be used herein. Preferably the peracid is in solid form.

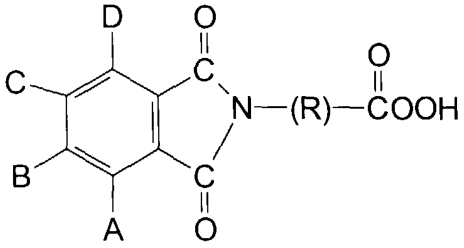
[0052] In a preferred embodiment of the present invention the peracid has the general formula

$$X\text{-}R\text{-}C(O)OOH$$

wherein R is a linear or branched alkyl chain having at least 1 carbon atoms and X is hydrogen or a substituent group selected from the group consisting of alkyl, especially alkyl chains of from 1 to 24 carbon atoms, aryl, halogen, ester, ether, amine, amide, substituted phthalic amino, imide, hydroxide, sulphide, sulphate, sulphonate, carboxylic, heterocyclic, nitrate, aldehyde, phosphonate, phosphonic or mixtures thereof. Preferred examples of such peracid are selected from diperoxydodecanoic acid, monononylamide of monoperoxysuccinic acid, and mixtures thereof.

[0053] More particularly the R group preferably comprises up to 24 carbon atoms. Alternatively, the R group may be a branched alkyl chain comprising one or more side chains which comprise substituent groups selected from the group consisting of aryl, halogen, ester, ether, amine, amide, substituted phthalic amino, imide, hydroxide, sulphide, sulphate, sulphonate, carboxylic, heterocyclic, nitrate, aldehyde, ketone or mixtures thereof.

[0054] In a preferred peracid the X group, according to the above general formula, is phthalimido group. Thus, particularly preferred peracids are those having general formula:



where R is C1-20 and where A, B, C and D are independently either hydrogen or substituent groups individually selected from the group consisting of alkyl, hydroxyl, nitro, halogen, amine, ammonium, cyanide, carboxylic, sulphate, sulphonate, aldehydes or mixtures thereof.

[0055] In a preferred aspect of the present invention R is an alkyl group having from 3 to 12 carbon atoms, more preferably from 5 to 9 carbon atoms. Preferred substituent groups A, B, C and D are linear or branched alkyl groups having from 1 to 5 carbon atoms, but more preferably hydrogen.

[0056] Preferred peracids are selected from the group consisting of phthalimido peroxy hexanoic acid, phthalimido peroxy heptanoic acid, phthalimido peroxy octanoic acid, phthalimido peroxy nonanoic acid, phthalimido peroxy decanoic acid and mixtures thereof.

[0057] In a particularly preferred aspect of the present invention the peracid has the formula such that R is C_5H_{10}i. e. phthalimido peroxy hexanoic acid or PAP. This peracid is preferably used as a substantially water-insoluble solid or wetcake and is available from Ausimont under the trade name Euroco.

[0058] Still another other suitable bleaching system for use herein is the diacyl peroxide. Suitable diacyl peroxides for use herein are selected from the group consisting of aliphatic, aromatic and aliphatic-aromatic diacyl peroxides, and mixtures thereof.

[0059] Suitable aliphatic diacyl peroxides for use herein are dilauroyl peroxide, didecanoyl peroxide, dimyristoyl peroxide, or mixtures thereof. A suitable aromatic diacyl peroxide for use herein is for example benzoyl peroxide. A suitable aliphatic-aromatic diacyl peroxide for use herein is for example lauroyl benzoyl peroxide. Such diacyl peroxides have the advantage to be particularly safe to fabrics and fabric dyes while delivering excellent bleaching performance.

iii)-a hypohalite bleach component; and

[0060] In another preferred execution, the bleaching system may comprise as an alternative or in addition to one or both of the category mentioned above, bleaching agents of the hypohalite type that are oxidative bleaches and subsequently lead to the formation of halide ion. Hypohalites bleaches are typically at a level of from 1% to 15% by weight, more preferably from 1% to 10% by weight of the composition.

[0061] Common among these types of bleaches are the alkaline metal and alkaline earth metal hypochlorites, hypobromites and hypoiodites although other bleaches that are organic based sources of halide, such as chloroisocyanurates, are also applicable. Preferred bleach has the formula $M(OX)_y$ where:

M is member selected from sodium, potassium, magnesium, calcium and mixtures thereof;
O is an oxygen atom;
X is member selected from chlorine, bromine, iodine and mixtures thereof; and
y is 1 or 2 depending on the charge of M.

[0062] Preferred hypohalite bleaches for the purpose of the invention are sodium hypochlorite, potassium hypochlorite, calcium hypochlorite, magnesium hypochlorite, sodium hypobromite, potassium hypobromite, calcium hypobromite, magnesium hypobromite, sodium hypoiodite and potassium hypoiodite , more preferably sodium hypochlorite, potassium hypochlorite, calcium hypochlorite, magnesium hypochlorite, most preferably sodium hypochlorite.

iv)-Persulfate salts

[0063] Persulfate salts can also be used herein for the present invention as bleaching system. Persulfate bleaches (e.g., OXONE, manufactured commercially by DuPont) can also be used. Typical level of these salts are of from 0.1% to 40% by weight, more preferably from 1 % to 20% by weight and most preferably from 2% to 15% by weight of the compositions.

[0064] In addition to the above bleaching system, the composition may comprises bleaching agents other than oxygen bleaching agents are also known in the art and can be utilized herein. One type of non-oxygen bleaching agent of particular interest includes photoactivated bleaching agents such as the sulfonated zinc and/or aluminum phthalocyanines. See U.S. 4,033,718. If used, detergent compositions will typically contain from 0.025% to 1.25%, by weight, of such bleaches, especially sulfonate zinc phthalocyanine.

[0065] If desired, the bleaching compounds can be catalyzed by means of a manganese compound. Such compounds are well-known in the art and include, for example, the manganese-based catalysts disclosed in U.S. 5,246,621, U.S. 5,244,594; U.S. 5,194,416; U.S. 5,114,606; and EP 549,271A1, 549,272A1, 544,440A2, and 544,490A1; Preferred examples of these catalysts include $Mn^{IV}_2(u\text{-}O)_3(1,4,7\text{-trimethyl-}1,4,7\text{-triazacyclononane})_2(PF_6)_2$, $Mn^{III}_2\ (u\text{-}O)_1(u\text{-}OAc)_2(1,4,7\text{-trimethyl-}1,4,7\text{-triazacyclononane})_{2\text{-}}(ClO_4)_2$, $Mn^{IV}_4(u\text{-}O)_6(1,4,7\text{-triazacyclononane})_4(ClO_4)_4$, $Mn^{III}Mn^{IV}_4\ (u\text{-}O)_1(u\text{-}OAc)_{2\text{-}}(1,4,7\text{-trimethyl-}1,4,7\text{-triazacyclononane})_2(ClO_4)_3$, $Mn^{IV}(1,4,7\text{-trimethyl-}1,4,7\text{-triazacyclononane})\text{-}(OCH_3)_3(PF_6)$, and mixtures thereof. Other metal-based bleach catalysts include those disclosed in U.S. Pat. 4,430,243 and U.S. 5,114,611. The use of manganese with various complex ligands to enhance bleaching is also reported in the following US Patents: 4,728,455; 5,284,944; 5,246,612; 5,256,779; 5,280,117; 5,274,147; 5,153,161; and 5,227,084.

[0066] As a practical matter, and not by way of limitation, the compositions and processes herein can be adjusted to provide on the order of at least one part per ten million of the active bleach catalyst species in the aqueous washing liquor, and will preferably provide from 0.1 ppm to 700 ppm, more preferably from 1 ppm to 500 ppm, of the catalyst species in the laundry liquor.

[0067] Typically the laundry and cleaning composition comprises a detersive ingredient.

Detersive ingredients

[0068] Non-limiting examples of surfactants useful herein typically at levels from 1% to 55%, by weight, include the conventional C_{11}-C_{18} alkyl benzene sulfonates ("LAS") and primary, branched-chain and random C_{10}-C_{20} alkyl sulfates ("AS"), the C_{10}-C_{18} secondary (2,3) alkyl sulfates of the formula $CH_3(CH_2)_x(CHOSO_3^-M^+)CH_3$ and $CH_3(CH_2)_y(CHOSO_3^-M^+)\ CH_2CH_3$ where x and (y + 1) are integers of at least 7, preferably at least 9, and M is a water-solubilizing cation, especially sodium, unsaturated sulfates such as oleyl sulfate, the C_{10}-C_{16} alkyl alkoxy sulfates ("AE_xS"; especially x up to 7 EO ethoxy sulfates), C_{10}-C_{18} alkyl alkoxy carboxylates (especially the EO 1-5 ethoxycarboxylates), the $C_{10\text{-}18}$ glycerol ethers, the C_{10}-C_{18} alkyl polyglycosides and their corresponding sulfated polyglycosides, and C_{12}-C_{18} alpha-sulfonated fatty acid esters. If desired, the conventional nonionic and amphoteric surfactants such as the C_{10}-C_{16} alkyl ethoxylates ("AE") including the so-called narrow peaked alkyl ethoxylates like the commercially available Empicol ESC 3/PG 2 from Albright & Wilson and C_6-C_{12} alkyl phenol alkoxylates (especially ethoxylates and mixed ethoxy/propoxy), C_{12}-C_{18} betaines and sulfobetaines ("sultaines"), C_{10}-C_{18} amine oxides, cationic surfactants and the like, can also be included in the overall compositions. The C_{10}-C_{18} N-alkyl polyhydroxy fatty acid amides can also be used. Typical examples include the C_{12}-C_{18} N-methylglucamides. See WO 9,206,154. Other sugar-derived surfactants include the N-alkoxy polyhydroxy fatty acid amides, such as C_{10}-C_{18} N-(3-methoxypropyl) glucamide. The N-propyl through N-hexyl C_{12}-C_{18} glucamides can be used for low sudsing. C_{10}-C_{20} conventional soaps may also be used. If high sudsing is desired, the branched-chain C_{10}-C_{16} soaps may be used. Mixtures of anionic and nonionic surfactants are especially useful. Other conventional useful surfactants are listed in standard texts.

[0069] Fully formulated laundry and cleaning compositions preferably contain, in addition to the hereinbefore described components, one or more of the following ingredients.

Builders

[0070] Detergent builders can optionally be included in the compositions herein to assist in controlling mineral hardness. Inorganic as well as organic builders can be used. Builders are typically used in fabric laundering compositions to assist in the removal of particulate soils.

[0071] The level of builder can vary widely depending upon the end use of the composition and its desired physical form. When present, the compositions will typically comprise at least 1% builder, preferably from 1% to 80%. Liquid formulations typically comprise from 5% to 50%, more typically 5% to 30%, by weight, of detergent builder. Granular formulations typically comprise from 1% to 80%, more typically from 5% to 50% by weight, of the detergent builder. Lower or higher levels of builder, however, are not meant to be excluded.

[0072] Inorganic or P-containing detergent builders include, but are not limited to, the alkali metal, ammonium and alkanolammonium salts of polyphosphates (exemplified by the tripolyphosphates, pyrophosphates, and glassy polymeric meta-phosphates), phosphonates, phytic acid, silicates, carbonates (including bicarbonates and sesquicarbonates), sulphates, and aluminosilicates. However, non-phosphate builders are required in some locales. Importantly, the compositions herein function surprisingly well even in the presence of the so-called "weak" builders (as compared with phosphates) such as citrate, or in the so-called "underbuilt" situation that may occur with zeolite or layered silicate builders.

[0073] Examples of silicate builders are the alkali metal silicates, particularly those having a SiO_2:Na_2O ratio in the range 1.0:1 to 3.2:1 and layered silicates, such as the layered sodium silicates described in U.S. 4,664,839. NaSKS-6 is the trademark for a crystalline layered silicate marketed by Hoechst (commonly abbreviated herein as "SKS-6"). Unlike zeolite builders, the Na SKS-6 silicate builder does not contain aluminum. NaSKS-6 has the delta-Na_2SiO_5 morphology form of layered silicate. It can be prepared by methods such as those described in DE-A-3,417,649 and DE-A-3,742,043. SKS-6 is a highly preferred layered silicate for use herein, but other such layered silicates, such as those having the general formula $NaMSi_xO_{2x+1}\cdot yH_2O$ wherein M is sodium or hydrogen, x is a number from 1.9 to 4, preferably 2, and y is a number from 0 to 20, preferably 0 can be used herein. Various other layered silicates from Hoechst include NaSKS-5, NaSKS-7 and NaSKS-11, as the alpha, beta and gamma forms. As noted above, the delta-Na_2SiO_5 (NaSKS-6 form) is most preferred for use herein. Other silicates may also be useful such as for example magnesium silicate, which can serve as a crispening agent in granular formulations, as a stabilizing agent for oxygen bleaches, and as a component of suds control systems.

[0074] Examples of carbonate builders are the alkaline earth and alkali metal carbonates as disclosed in DE 2,321,001.

[0075] Aluminosilicate builders are useful in the present invention. Aluminosilicate builders are of great importance in most currently marketed heavy duty granular detergent compositions, and can also be a significant builder ingredient in liquid detergent formulations. Aluminosilicate builders include those having the empirical formula:

$$M_{z/n}[(AlO_2)_z(SiO_2)_y]\cdot xH_2O$$

wherein z and y are integers usually of at least 6, the molar ratio of z to y is in the range from 1.0 to 0, and x is an integer from 0 to 264, and M is a Group IA or IIA element, e.g., Na, K, Mg, Ca with valence n.

[0076] Useful aluminosilicate ion exchange materials are commercially available. These aluminosilicates can be crystalline or amorphous in structure and can be naturally-occurring aluminosilicates or synthetically derived. A method for producing aluminosilicate ion exchange materials is disclosed in U.S. 3,985,669. Preferred synthetic crystalline aluminosilicate ion exchange materials useful herein are available under the designations Zeolite A, Zeolite P (B), Zeolite MAP and Zeolite X. In an especially preferred embodiment, the crystalline aluminosilicate ion exchange material has the formula:

$$Na_{12}[(AlO_2)_{12}(SiO_2)_{12}]\cdot xH_2O$$

wherein X is from 20 to 30, especially 27. This material is known as Zeolite A. Dehydrated zeolites (x = 0 - 10) may also be used herein. Preferably, the aluminosilicate has a particle size of 0.1-10 microns in diameter.

[0077] Organic detergent builders suitable for the purposes of the present invention include, but are not restricted to, a wide variety of polycarboxylate compounds. As used herein, "polycarboxylate" refers to compounds having a plurality of carboxylate groups, preferably at least 3 carboxylates. Polycarboxylate builder can generally be added to the composition in acid form, but can also be added in the form of a neutralized salt. When utilized in salt form, alkali metals, such as sodium, potassium, and lithium, or alkanolammonium salts are preferred.

[0078] Included among the polycarboxylate builders are a variety of categories of useful materials. One important category of polycarboxylate builders encompasses the ether polycarboxylates, including oxydisuccinate, as disclosed in Berg, U.S. 3,128,287, U.S. 3,635,830. See also "TMS/TDS" builders of U.S. 4,663,071. Suitable ether polycarboxylates also include cyclic compounds, particularly alicyclic compounds, such as those described in U.S. 3,923,679; 3,835,163; 4,158,635; 4,120,874 and 4,102,903.

[0079] Other useful detergency builders include the ether hydroxypolycarboxylates, copolymers of maleic anhydride with ethylene or vinyl methyl ether, 1, 3, 5-trihydroxy benzene-2, 4, 6-trisulphonic acid, and carboxymethyloxysuccinic acid, the various alkali metal, ammonium and substituted ammonium salts of polyacetic acids such as ethylenediamine tetraacetic acid and nitrilotriacetic acid, as well as polycarboxylates such as mellitic acid, pyromellitic, succinic acid, oxydisuccinic acid, polymaleic acid, benzene 1,3,5-tricarboxylic acid, carboxymethyloxysuccinic acid, and soluble salts thereof.

[0080] Citrate builders, e.g., citric acid and soluble salts thereof (particularly sodium salt), are polycarboxylate builders of particular importance for heavy duty liquid detergent formulations due to their availability from renewable resources and their biodegradability. Citrates can also be used in granular compositions, especially in combination with zeolite and/or layered silicate builders. Oxydisuccinates are also especially useful in such compositions and combinations.

[0081] Also suitable in the detergent compositions of the present invention are the 3,3-dicarboxy-4-oxa-1,6-hexanedioates and the related compounds disclosed in U.S. 4,566,984. Useful succinic acid builders include the C_5-C_{20} alkyl and alkenyl succinic acids and salts thereof. A particularly preferred compound of this type is dodecenylsuccinic acid. Specific examples of succinate builders include: laurylsuccinate, myristylsuccinate, palmitylsuccinate, 2-dodecenylsuccinate (preferred), 2-pentadecenylsuccinate, and the like. Laurylsuccinates are the preferred builders of this group, and are described in EP 0,200,263.

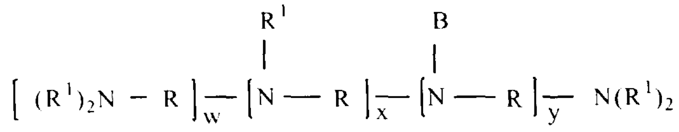
[0082] Other suitable polycarboxylates are disclosed in U.S 4,144,226 and in U.S. 3,308,067. See also U.S. 3,723,322.

[0083] Fatty acids, e.g., C_{12}-C_{18} monocarboxylic acids such as oleic acid and/or its salts, can also be incorporated into the compositions alone, or in combination with the aforesaid builders, especially citrate and/or the succinate builders, to provide additional builder activity. Such use of fatty acids will generally result in a diminution of sudsing, which should be taken into account by the formulator.

[0084] In situations where phosphorus-based builders can be used, and especially in the formulation of bars used for hand-laundering operations, the various alkali metal phosphates such as the well-known sodium tripolyphosphates, sodium pyrophosphate and sodium orthophosphate can be used. Phosphonate builders such as ethane-1-hydroxy-1,1-diphosphonate and other known phosphonates (see, for example, U.S. Patents 3,159,581; 3,213,030; 3,422,021; 3,400,148 and 3,422,137) can also be used.

Polyamines

[0085] Polyamines are useful optional components for providing care, in particular color care to the treated surface like fabric. Accordingly, a preferred composition of the present invention comprises from 0.1%, preferably from 5%, more preferably from 10% to 80%, preferably to 50%, more preferably to 25% by weight, of a polyamine having the formula:



$$\left[(R^1)_2N-R\right]_w-\left[\overset{\overset{R^1}{|}}{N}-R\right]_x-\left[\overset{\overset{B}{|}}{N}-R\right]_y-N(R^1)_2$$

wherein R, R1 and B are suitably described in U.S. 5,565,145 Watson et al., issued October 15, 1996 incorporated herein by reference, and w, x, and y have values which provide for a backbone prior to substitution of preferably at least about 1200 daltons, more preferably 1800 daltons.

[0086] R1 units are preferably alkyleneoxy units having the formula:

$$-(CH_2CHR'O)_m(CH_2CH_2O)_nH$$

wherein R' is methyl or ethyl, m and n are preferably from about 0 to about 50, provided the average value of alkoxylation provided by m + n is at least about 0.5.

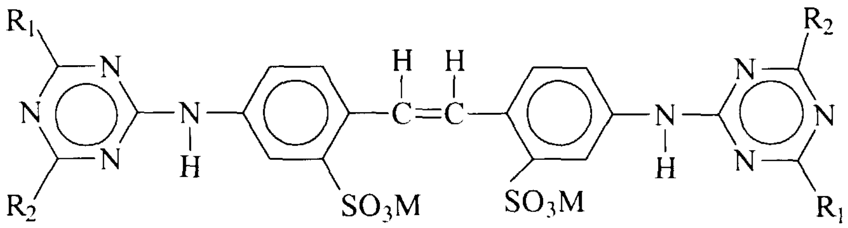
[0087] A further description of polyamine dispersants suitable for use in the present invention is found in U.S. 4,891,160 Vander Meer, issued January 2, 1990; U.S. 4,597,898 Vander Meer, issued July 1, 1986; EP-0,111,965, Oh and Gosselink, published June 27, 1984; EP-0,111,984, Gosselink, published June 27, 1984; EP-0,112,592, Gosselink, published July 4, 1984; U.S. 4,548,744, Connor, issued October 22, 1985; and U.S. 5,565,145 Watson et al., issued October 15, 1996; all of which are included herein by reference.

[0088] Preferred polyamines are selected from polyethylene imines with molecular weight of 1200 or 1800 and with either 1 or 4 ethoxylation, as described in US 5,565,145.

Brighteners

[0089] The compositions herein can also optionally contain from 0.005% to 5% by weight of certain types of optical brighteners like hydrophilic brighteners which also provide a dye transfer inhibition action, and/or hydrophobic brighteners. If used, the compositions herein will preferably comprise from 0.001% to 1% by weight of such optical brighteners.

[0090] The hydrophilic optical brighteners useful in the present invention are those having the structural formula:



wherein R_1 is selected from anilino, N-2-bis-hydroxyethyl and NH-2-hydroxyethyl; R_2 is selected from N-2-bis-hydroxyethyl, N-2-hydroxyethyl-N-methylamino, morphilino, chloro and amino; and M is a salt-forming cation such as sodium or potassium.

[0091] When in the above formula, R_1 is anilino, R_2 is N-2-bis-hydroxyethyl and M is a cation such as sodium, the brightener is 4,4',-bis[(4-anilino-6-(N-2-bis-hydroxyethyl)-s-triazine-2-yl)amino]-2,2'-stilbenedisulfonic acid and disodium salt. This particular brightener species is commercially marketed under the tradename Tinopal-UNPA-GX® by Ciba-Geigy Corporation. Tinopal-UNPA-GX is the preferred hydrophilic optical brightener useful in the rinse added compositions herein.

[0092] When in the above formula, R_1 is anilino, R_2 is N-2-hydroxyethyl-N-2-methylamino and M is a cation such as sodium, the brightener is 4,4'-bis[(4-anilino-6-(N-2-hydroxyethyl-N-methylamino)-s-triazine-2-yl)amino]2,2'-stilbenedisulfonic acid disodium salt. This particular brightener species is commercially marketed under the tradename Tinopal 5BM-GX® by Ciba-Geigy Corporation.

[0093] When in the above formula, R_1 is anilino, R_2 is morphilino and M is a cation such as sodium, the brightener is 4,4'-bis[(4-anilino-6-morphilino-s-triazine-2-yl)amino]2,2'-stilbenedisulfonic acid, sodium salt. This particular brightener species is commercially marketed under the tradename Tinopal AMS-GX® by Ciba Geigy Corporation.

[0094] Also useful herein are the hydrophobic brighteners, preferably hydrophobic nonionic brighteners. These optical brighteners are substantially insoluble in water. Wherein substantially insoluble means that less than 1 gram of the brightener will dissolve in 1 liter of distilled water at pH 7. Nonionic brighteners, meaning those brighteners that do not have any permanently charged group or a group selected from sulphonic, sulphate, carboxylic, phosphonate, phosphate and quaternary ammonium.

[0095] Preferably, the optical brightener is a substantially insoluble compound selected from compounds comprising stilbene, pyrazoline, coumarin, carboxylic acids, methinecyanines, dibenzothiophene-5,5-dioxide, azoles, 5- and 6-membered-ring heterocyclic, benzene or derivatives thereof and mixtures thereof. More preferably the brightener comprises a benzoxozol, pyrazole, triazole, triazine, imidazole, furan group or mixtures thereof.

[0096] Examples of preferred commerically available hydrophobic optical brighteners include those selected from the group consisting of Benzoxazole, 2,2'-(2,5-thiophenediyl)bis- (7Cl, 8Cl, 9Cl) sold under the tradename Tinopal SOP (from Ciba-Geigy, C.I. Fluorescent Brightener 140 (9Cl), 7-(dimethylamino)-4-methyl-2H-1-benzopyran-2-one (9Cl) sold under the tradename Tinopal SWN (from Ciba-Geigy), Benzoxazole, 2,2'-(1,2-ethenediyl)bis[5-methyl- (9Cl) sold under the tradename Tinopal K (from Ciba-Geigy), C.I. Fluorescent Brightener 352 (9Cl) 1H-Benzimidazole, 2,2'-(2,5-furandiyl)bis[1-methyl- (9Cl) sold under the tradename Uvitex AT (from Ciba-Geigy).

Soil Release Agent

[0097] In the present invention, an optional soil release agent can be added. Typical levels of incorporation in the composition are from 0% to 10%, preferably from 0.2% to 5%, of a soil release agent. Preferably, such a soil release agent is a polymer.

[0098] Soil Release agents are desirably used in fabric softening compositions of the instant invention. Any polymeric soil release agent known to those skilled in the art can optionally be employed in the compositions of this invention. Polymeric soil release agents are characterized by having both hydrophilic segments, to hydrophilize the surface of hydrophobic fibers, such as polyester and nylon, and hydrophobic segments, to deposit upon hydrophobic fibers and remain adhered thereto through completion of washing and rinsing cycles and, thus, serve as an anchor for the hydrophilic segments. This can enable stains occurring subsequent to treatment with the soil release agent to be more easily cleaned in later washing procedures.

[0099] If utilized, soil release agents will generally comprise from about 0.01% to about 10.0%, by weight, of the detergent compositions herein, typically from about 0.1% to about 5%, preferably from about 0.2% to about 3.0%.

[0100] The following, all included herein by reference, describe soil release polymers suitable for use in the present invention. U.S. 3,959,230 Hays, issued May 25, 1976; U.S. 3,893,929 Basadur, issued July 8, 1975; U.S. 4,000,093, Nicol, *et al*., issued December 28, 1976; U.S. Patent 4,702,857 Gosselink, issued October 27, 1987; U.S. 4,968,451, Scheibel *et al.,* issued November 6; U.S. 4,702,857, Gosselink, issued October 27, 1987; U.S. 4,711,730, Gosselink *et al*., issued December 8, 1987; U.S. 4,721,580, Gosselink, issued January 26, 1988; U.S. 4,877,896, Maldonado *et al*., issued October 31, 1989; U.S. 4,956,447, Gosselink *et al.,* issued September 11, 1990; U.S. 5,415,807 Gosselink *et al.,* issued May 16, 1995; European Patent Application 0 219 048, published April 22, 1987 by Kud, *et al*..

[0101] Further suitable soil release agents are described in U.S. 4,201,824, Violland *et al*.; U.S. 4,240,918 Lagasse *et al.;* U.S. 4,525,524 Tung *et al*.; U.S. 4,579,681, Ruppert *et al.;* U.S. 4,240,918; U.S. 4,787,989; U.S. 4,525,524; EP 279,134 A, 1988, to Rhone-Poulenc Chemie; EP 457,205 A to BASF (1991); and DE 2,335,044 to Unilever N. V., 1974 all incorporated herein by reference.

[0102] Commercially available soil release agents include the METOLOSE SM100, METOLOSE SM200 manufactured by Shin-etsu Kagaku Kogyo K.K., SOKALAN type of material, e.g., SOKALAN HP-22, available from BASF (Germany), ZELCON 5126 (from Dupont) and MILEASE T (from ICI).

Scum Dispersant

[0103] In the present invention, the premix can be combined with an optional scum dispersant, other than the soil release agent, and heated to a temperature at or above the melting point(s) of the components.

[0104] The preferred scum dispersants herein are formed by highly ethoxylating hydrophobic materials. The hydrophobic material can be a fatty alcohol, fatty acid, fatty amine, fatty acid amide, amine oxide, quaternary ammonium compound, or the hydrophobic moieties used to form soil release polymers. The preferred scum dispersants are highly ethoxylated, e.g., more than 17, preferably more than 25, more preferably more than 40, moles of ethylene oxide per molecule on the average, with the polyethylene oxide portion being from 76% to 97%, preferably from 81% to 94%, of the total molecular weight.

[0105] The level of scum dispersant is sufficient to keep the scum at an acceptable, preferably unnoticeable to the consumer, level under the conditions of use, but not enough to adversely affect softening. For some purposes it is desirable that the scum is nonexistent. Depending on the amount of anionic or nonionic detergent, etc., used in the wash cycle of a typical laundering process, the efficiency of the rinsing steps prior to the introduction of the compositions herein, and the water hardness, the amount of anionic or nonionic detergent surfactant and detergency builder (especially phosphates and zeolites) entrapped in the fabric (laundry) will vary. Normally, the minimum amount of scum dispersant should be used to avoid adversely affecting softening properties. Typically scum dispersion requires at least 2%, preferably at least 4% (at least 6% and preferably at least 10% for maximum scum avoidance) based upon the level of softener active. However, at levels of 10% (relative to the softener material) or more, one risks loss of softening efficacy of the product especially when the fabrics contain high proportions of nonionic surfactant which has been absorbed during the washing operation.

[0106] Preferred scum dispersants are: Brij 700®; Varonic U-250®; Genapol T-500®, Genapol T-800®; Plurafac A-79®; and Neodol 25-50®.

Bactericides

[0107] Examples of bactericides used in the compositions of this invention include glutaraldehyde, formaldehyde, 2-bromo-2-nitro-propane-1,3-diol sold by Inolex Chemicals, located in Philadelphia, Pennsylvania, under the trade name Bronopol®, and a mixture of 5-chloro-2-methyl-4-isothiazoline-3-one and 2-methyl-4-isothiazoline-3-one sold by

Rohm and Haas Company under the trade name Kathon 1 to 1,000 ppm by weight of the agent.

Chelating Agents

[0108] The compositions and processes herein can optionally employ one or more copper and/or nickel chelating agents ("chelators"). Such water-soluble chelating agents can be selected from the group consisting of amino carboxylates, amino phosphonates, polyfunctionally-substituted aromatic chelating agents and mixtures thereof, all as hereinafter defined. The whiteness and/or brightness of fabrics are substantially improved or restored by such chelating agents and the stability of the materials in the compositions are improved. 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.

[0109] Amino carboxylates useful as optional chelating agents include ethylenediaminetetracetates, N-hydroxyethylethylenediaminetriacetates, nitrilotriacetates, ethylenediamine tetraproprionates, triethylenetetra-aminehexacetates, diethylenetriaminepentaacetates, and ethanoldiglycines, alkali metal, ammonium, and substituted ammonium salts therein and mixtures therein.

[0110] Amino phosphonates are also suitable for use as chelating agents in the compositions of the invention when at lease low levels of total phosphorus are permitted in detergent compositions, and include ethylenediaminetetrakis (methylenephosphonates) as DEQUEST. Preferred, these amino phosphonates do not contain alkyl or alkenyl groups with more than about 6 carbon atoms.

[0111] 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.

[0112] 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, to Hartman and Perkins.

[0113] 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.

[0114] Preferred chelating agents include DETMP, DETPA, NTA, EDDS and mixtures thereof.

[0115] If utilized, these chelating agents will generally comprise from about 0.1% to about 15% by weight of the fabric care compositions herein. More preferably, if utilized, the chelating agents will comprise from about 0.1% to about 3.0% by weight of such compositions.

Crystal growth inhibitor component (CGI component)

[0116] The compositions of the present invention can further contain a crystal growth inhibitor component, preferably an organodiphosphonic acid component, incorporated preferably at a level of from 0.01% to 5%, more preferably from 0.1% to 2% by weight of the compositions.

[0117] By organo diphosphonic acid it is meant herein an organo diphosphonic acid which does not contain nitrogen as part of its chemical structure. This definition therefore excludes the organo aminophosphonates, which however may be included in compositions of the invention as heavy metal ion sequestrant components.

[0118] The organo diphosphonic acid is preferably a C_1-C_4 diphosphonic acid, more preferably a C_2 diphosphonic acid, such as ethylene diphosphonic acid, or most preferably ethane 1-hydroxy-1,1-diphosphonic acid (HEDP) and may be present in partially or fully ionized form, particularly as a salt or complex.

[0119] Still useful herein as crystal growth inhibitor are the organic monophosphonic acids.

[0120] Organo monophosphonic acid or one of its salts or complexes is also suitable for use herein as a CGI.

[0121] By organo monophosphonic acid it is meant herein an organo monophosphonic acid which does not contain nitrogen as part of its chemical structure. This definition therefore excludes the organo aminophosphonates, which however may be included in compositions of the invention as heavy metal ion sequestrants.

[0122] The organo monophosphonic acid component may be present in its acid form or in the form of one of its salts or complexes with a suitable counter cation. Preferably any salts/complexes are water soluble, with the alkali metal and alkaline earth metal salts/complexes being especially preferred.

[0123] A prefered organo monophosphonic acid is 2-phosphonobutane-1,2,4-tricarboxylic acid commercially available from Bayer under the tradename of Bayhibit.

Enzyme

[0124] The compositions and processes herein can optionally employ one or more enzymes such as lipases, proteases, cellulase, amylases and peroxidases. A preferred enzyme for use herein is a cellulase enzyme. Indeed, this type of enzyme will further provide a color care benefit to the treated fabric. Cellulases usable herein include both bacterial and fungal types, preferably having a pH optimum between 5 and 9.5. U.S. 4,435,307 discloses suitable fungal cellulases from *Humicola insolens* or *Humicola* strain DSM1800 or a cellulase 212-producing fungus belonging to the genus Aeromonas, and cellulase extracted from the hepatopancreas of a marine mollusk, *Dolabella Auricula Solander.* Suitable cellulases are also disclosed in GB-A-2.075.028; GB-A-2.095.275 and DE-OS-2.247.832. CAREZYME® and CELLUZYME® (Novo) are especially useful. Other suitable cellulases are also disclosed in WO 91/17243 to Novo, WO 96/34092, WO 96/34945 and EP-A-0,739,982. In practical terms for current commercial preparations, typical amounts are up to 5 mg by weight, more typically 0.01 mg to 3 mg, of active enzyme per gram of the detergent composition. Stated otherwise, the compositions herein will typically comprise from 0.001% to 5%, preferably 0.01%-1% by weight of a commercial enzyme preparation. In the particular cases where activity of the enzyme preparation can be defined otherwise such as with cellulases, corresponding activity units are preferred (e.g. CEVU or cellulase Equivalent Viscosity Units). For instance, the compositions of the present invention can contain cellulase enzymes at a level equivalent to an activity from 0.5 to 1000 CEVU/gram of composition. Cellulase enzyme preparations used for the purpose of formulating the compositions of this invention typically have an activity comprised between 1,000 and 10,000 CEVU/gram in liquid form, around 1,000 CEVU/gram in solid form.

Clay

[0125] The compositions of the invention may preferably contain a clay, preferably present at a level of from 0.05% to 40%, more preferably from 0.5% to 30%, most preferably from 2% to 20% by weight of the composition. For clarity, it is noted that the term clay mineral compound, as used herein, excludes sodium aluminosilicate zeolite builder compounds, which however, may be included in the compositions of the invention as optional components.

[0126] One preferred clay may be a bentonite clay. Highly preferred are smectite clays, as for example disclosed in the US Patents No.s 3,862,058 3,948,790, 3,954,632 and 4,062,647 and European Patents No.s EP-A-299,575 and EP-A-313,146 all in the name of the Procter and Gamble Company.

[0127] The term smectite clays herein includes both the clays in which aluminium oxide is present in a silicate lattice and the clays in which magnesium oxide is present in a silicate lattice. Smectite clays tend to adopt an expandable three layer structure.

[0128] Specific examples of suitable smectite clays include those selected from the classes of the montmorillonites, hectorites, volchonskoites, nontronites, saponites and sauconites, particularly those having an alkali or alkaline earth metal ion within the crystal lattice structure. Sodium or calcium montmorillonite are particularly preferred.

[0129] Suitable smectite clays, particularly montmorillonites, are sold by various suppliers including English China Clays, Laviosa, Georgia Kaolin and Colin Stewart Minerals.

[0130] Clays for use herein preferably have a particle dimension of from 10nm to 800nm more preferably from 20nm to 500 mm, most preferably from 50nm to 200 mm.

[0131] Particles of the clay mineral compound may be included as components of agglomerate particles containing other detergent compounds. Where present as such components, the term "largest particle dimension" of the clay mineral compound refers to the largest dimension of the clay mineral component as such, and not to the agglomerated particle as a whole.

[0132] Substitution of small cations, such as protons, sodium ions, potassium ions, magnesium ions and calcium ions, and of certain organic molecules including those having positively charged functional groups can typically take place within the crystal lattice structure of the smectite clays. A clay may be chosen for its ability to preferentially absorb one cation type, such ability being assessed by measurements of relative ion exchange capacity. The smectite clays suitable herein typically have a cation exchange capacity of at least 50 meq/100g. U.S. Patent No. 3,954,632 describes a method for measurement of cation exchange capacity.

[0133] The crystal lattice structure of the clay mineral compounds may have, in a preferred execution, a cationic fabric softening agent substituted therein. Such substituted clays have been termed 'hydrophobically activated' clays. The cationic fabric softening agents are typically present at a weight ratio, cationic fabric softening agent to clay, of from 1:200 to 1:10, preferably from 1:100 to 1:20. Suitable cationic fabric softening agents include the water insoluble tertiary amines or dilong chain amide materials as disclosed in GB-A-1 514 276 and EP-B-0 011 340.

[0134] A preferred commercially available "hydrophobically activated" clay is a bentonite clay containing approximately 40% by weight of a dimethyl ditallow quaternary ammonium salt sold under the tradename Claytone EM by English China Clays International.

[0135] In a highly preferred embodiment of the invention, the clay is present in an intimate mixture or in a particle with a humectant and a hydrophobic compound, preferably a wax or oil, such as paraffin oil. Preferred humectants are organic compounds, including propylene glycol, ethylene glycol, dimers or trimers of glycol, most preferably glycerol. The particle is preferably an agglomerate. Alternatively, the particle may be such that the wax or oil and optionally the humectant form an encapsulate on the clay or alternatively, the clay be a encapsulate for the wax or oil and the humectant. It may be preferred that the particle comprises an organic salt or silica or silicate.

[0136] However, in another embodiment of the invention, the clay is preferably mixed with one or more surfactants and optionally builders and optionally water, in which case the mixture is preferably subsequently dried. Preferably, such a mixture is further processed in a spray-drying method to obtain a spray dried particle comprising the clay.

[0137] It may be preferred that a flocculating agent is also comprised in the particle or granule comprising the clay.

Flocculating agent

[0138] The compositions of the invention may contain a clay flocculating agent, preferably present at a level of from 0.005% to 10%, more preferably from 0.05% to 5%, most preferably from 0.1% to 2% by weight of the composition.

[0139] The clay flocculating agent functions such as to bring together the particles of clay compound in the wash solution and hence to aid their deposition onto the surface of the fabrics in the wash. This functional requirement is hence different from that of clay dispersant compounds which are commonly added to laundry detergent compositions to aid the removal of clay soils from fabrics and enable their dispersion within the wash solution.

[0140] Preferred as clay flocculating agents herein are organic polymeric materials having an average weight of from 100,000 to 10,000,000, preferably from 150,000 to 5,000,000, more preferably from 200,000 to 2,000,000.

[0141] Suitable organic polymeric materials comprise homopolymers or copolymers containing monomeric units selected from alkylene oxide, particularly ethylene oxide, acrylamide, acrylic acid, vinyl alcohol, vinyl pyrrolidone, and ethylene imine. Homopolymers of, on particular, ethylene oxide, but also acrylamide and acrylic acid are preferred.

[0142] European Patents No.s EP-A-299,575 and EP-A-313,146 in the name of the Procter and Gamble Company describe preferred organic polymeric clay flocculating agents for use herein.

[0143] The weight ratio of clay to the flocculating polymer is preferably from 1000:1 to 1:1, more preferably from 500: 1 to 1:1, most preferably from 300:1 to 1:1, or even more preferably from 80:1 to 10:1, or in certain applications even from 60:1 to 20:1.

[0144] Inorganic clay flocculating agents are also suitable herein, typical examples of which include lime and alum.

[0145] The flocculating agent is preferably present in a detergent base granule such as a detergent agglomerate, extrudate or spray-dried particle, comprising generally one or more surfactants and builders.

Effervescent

[0146] Effervescent means may also be optionally used in the compositions of the invention.

[0147] Effervescency as defined herein means the evolution of bubbles of gas from a liquid, as the result of a chemical reaction between a soluble acid source and an alkali metal carbonate, to produce carbon dioxide gas, i.e.

$$C_6H_8O_7 + 3NaHCO_3 \rightarrow Na_3C_6H_5O_7 + 3CO_2 \uparrow + 3H_2O$$

[0148] Further examples of acid and carbonate sources and other effervescent systems may be found in : (Pharmaceutical Dosage Forms : Tablets Volume 1 Page 287 to 291).

Carbonate salts

[0149] Suitable alkali and/ or earth alkali inorganic carbonate salts herein include carbonate and hydrogen carbonate of potassium, lithium, sodium, and the like amongst which sodium and potassium carbonate are preferred. Suitable bicarbonates to be used herein include any alkali metal salt of bicarbonate like lithium, sodium, potassium and the like, amongst which sodium and potassium bicarbonate are preferred. However, the choice of carbonate or bicarbonate or mixtures thereof may be made depending on the pH desired in the aqueous medium wherein the granules are dissolved. For example where a relative high pH is desired in the aqueous medium (e.g., above pH 9.5) it may be preferred to use carbonate alone or to use a combination of carbonate and bicarbonate wherein the level of carbonate is higher than the level of bicarbonate. The inorganic alkali and/ or earth alkali carbonate salt of the compositions of the invention comprises preferably a potassium or more preferably a sodium salt of carbonate and/ or bicarbonate. Preferably, the carbonate salt comprises sodium carbonate, optionally also a sodium bicarbonate.

[0150] The inorganic carbonate salts herein are preferably present at a level of at least 20% by weight of the composition. Preferably they are present at a level of at least 23% or even 25% or even 30% by weight, preferably up to about 60% by weight or more preferably up to 55% or even 50% by weight.

[0151] They may be added completely or partially as separate powdered or granular component, as co-granules with other detergent ingredients, for example other salts or surfactants. In solid detergent compositions of the invention, they may also completely or partially be present in detergent granules such as agglomerates or spray dried granules.

[0152] In one embodiment of the invention, an effervescence source is present, preferably comprising an organic acid, such as carboxylic acids or aminoacids, and a carbonate. Then it may be preferred that part or all of the carbonate salt herein is premixed with the organic acid, and thus present in an separate granular component.

[0153] Preferred effervescent source are selected from compressed particles of citric acid and carbonate optionally with a binder; and particle of carbonate, bicarbonate and malic or maleic acid in weight ratios of 4:2:4. The dry add form of citric acid and carbonate are preferably used.

[0154] The carbonate may have any particle size. In one embodiment, in particular when the carbonate salt is present in a granule and not as separately added compound, the carbonate salt has preferably a volume median particle size from 5 to 375 microns, whereby preferably at least 60%, preferably at least 70% or even at least 80% or even at least 90% by volume, has a particle size of from 1 to 425 microns. More preferably, the carbon dioxide source has a volume median particle size of 10 to 250, whereby preferably at least 60 %, or even at least 70% or even at least 80% or even at least 90% by volume, has a particle size of from 1 to 375 microns; or even preferably a volume median particle size from 10 to 200 microns, whereby preferably at least 60 %, preferably at least 70% or even at least 80% or even at least 90% by volume, has a particle size of from 1 to 250 microns.

[0155] In particular when the carbonate salt is added as separate component, so to say 'dry-added' or admixed to the other detergent ingredients, the carbonate may have any particle size, including the above specified particle sizes, but preferably at least an volume average particle size of 200 microns or even 250 microns or even 300 microns.

[0156] It may be preferred that the carbon dioxide source of the required particle size is obtained by grinding a larger particle size material, optionally followed by selecting the material with the required particle size by any suitable method.

[0157] Whilst percarbonate salts may be present in the compositions of the invention as a bleaching agent, they are not included in the carbonate salts as defined herein

[0158] Other preferred optional ingredients include enzyme stabilisers, polymeric soil release agents, materials effective for inhibiting the transfer of dyes from one fabric to another during the cleaning process (i.e., dye transfer inhibiting agents), suds suppressors, optical brighteners or other brightening or whitening agents, anti-static agents, carriers, hydrotropes, processing aids, dyes or pigments, radical scavengers, antioxidants, stabilisers, pH control agents, solvents, suds controlling agents, suds booster, colouring agent, solvents for liquid formulations and solid fillers for bar compositions.

Form of the composition

[0159] The composition of the invention may take a variety of physical form including liquid, liquid suspension form, gel, foam in either aqueous or non-aqueous form, granular and tablet forms.

[0160] Liquid detergent compositions can contain water and other solvents as carriers. Low molecular weight primary or secondary alcohols exemplified by methanol, ethanol, propanol, and isopropanol are suitable. Monohydric alcohols are preferred for solubilizing surfactant, but polyols such as those containing from 2 to 6 carbon atoms and from 2 to 6 hydroxy groups (e.g., 1,3-propanediol, ethylene glycol, glycerine, and 1,2-propanediol) can also be used. The compositions may contain from 5% to 90%, typically 10% to 50% of such carriers.

[0161] Granular detergents can be prepared, for example, by spray-drying (final product density 520 g/l) or agglomerating (final product density above 600 g/l) the Base Granule. The remaining dry ingredients can then be admixed in granular or powder form with the Base Granule, for example in a rotary mixing drum, and the liquid ingredients (e.g., nonionic surfactant and perfume) can be sprayed on.

[0162] The detergent compositions herein will preferably be formulated such that, during use in aqueous cleaning operations, the wash water will have a pH of between 6.5 and 11, preferably between 7.0 and 10.0. Laundry products are typically at pH 7.5-9.0. 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.

Packaging form of the liquid compositions:

[0163] Depending on the end-use envisioned, the compositions herein can be packaged in a variety of containers including conventional bottles, bottles equipped with roll-on, sponge, brusher, sprayers, or aerosol dispensers.

[0164] In one embodiment of the present invention the composition is packaged in a two compartment container, wherein the bleaching composition as described herein is packaged in one compartment and a second composition is packaged in the second compartment. In a particularly preferred aspect, the second composition is a conventional heavy duty liquid detergent composition, preferably comprising ingredients, particularly bleach-sensitive ingredients such as surfactants, and enzymes.

Spray Dispenser

[0165] The present invention also relates to such compositions incorporated into a spray dispenser to create an article of manufacture that can facilitate treatment or pre-treatment of fabric articles and/or surfaces with the invention compositions. The spray dispenser comprises manually activated and non-manual powered (operated) spray means and a container containing the treating composition. Typical disclosure of such spray dispenser can be found in WO 96/04940 page 19 line 21 to page 22 line 27. The articles of manufacture preferably are in association with instructions for use to ensure that the consumer applies sufficient ingredient of the composition to provide the desired benefit.

Processes of treating surfaces

[0166] In the present invention, the surface to be cleaned is treated with a composition, preferably in liquid form, of the present invention.

[0167] By "surfaces", it is meant herein any inanimate surface. These inanimate surfaces include, but are not limited to, hard-surfaces typically found in houses like kitchens, bathrooms, or in car interiors, e.g., tiles, walls, floors, chrome, glass, smooth vinyl, any plastic, plastified wood, table top, sinks, cooker tops, dishes, sanitary fittings such as sinks, showers, shower curtains, wash basins, WCs and the like, as well as fabrics including clothes, curtains, drapes, bed linens, bath linens, table cloths, sleeping bags, tents, upholstered furniture and the like, and carpets. Inanimate surfaces also include household appliances including, but not limited to, refrigerators, freezers, washing machines, automatic dryers, ovens, microwave ovens, dishwashers and so on.

[0168] By "treating a surface", it is meant herein bleaching said surfaces as the compositions of the present invention comprise a bleaching system, preferably based on a peracid compound or a mixture thereof and optionally cleaning as said compositions may comprise a surfactant or any other conventional cleaning agents.

[0169] Thus, the present invention also encompasses a process of treating, especially bleaching a fabric, of the inanimate surface. In such a process a composition according to the present invention is contacted with the fabrics to be treated.

[0170] This can be done either in a so-called "pretreatment mode", where a liquid bleaching composition, as defined herein, is applied neat onto said fabrics before the fabrics are rinsed, or washed then rinsed, or in a "soaking mode" where a liquid bleaching composition, as defined herein, is first diluted in an aqueous bath and the fabrics are immersed and soaked in the bath, before they are rinsed, or in a "through the wash mode", where a liquid bleaching composition, as defined herein, is added on top of a wash liquor formed by dissolution or dispersion of a typical laundry detergent. It is also essential in both cases, that the fabrics be rinsed after they have been contacted with said composition, before said composition has completely dried off.

[0171] The compositions according to the present invention may be used in neat or diluted form. However the compositions herein are typically used in diluted form in a laundry operation. By "in diluted form", it is meant herein that the compositions for the bleaching of fabrics according to the present invention may be diluted by the user, preferably with water. Such dilution may occur for instance in hand laundry applications as well as by other means such as in a washing machine. Said compositions can be diluted up to 500 times, preferably from 5 to 200 times and more preferably from 10 to 80 times.

[0172] More specifically, the process of bleaching fabrics according to the present invention comprises the steps of first contacting said fabrics with a bleaching composition according to the present invention, in its diluted form, then allowing said fabrics to remain in contact with said composition, for a period of time sufficient to bleach said fabrics, typically 1 to 60 minutes, preferably 5 to 30 minutes, then rinsing said fabrics with water. If said fabrics are to be washed, i.e., with a conventional detergent composition preferably comprising at least one surface active agent, said washing may be conducted together with the bleaching of said fabrics by contacting said fabrics at the same time with a bleaching composition according to the present invention and said detergent composition, or said washing may be conducted before or after said fabrics have been bleached. Accordingly, said process according to the present invention allows bleaching of fabrics and optionally washing of fabrics with a detergent composition preferably comprising at least one surface active agent before the step of contacting said fabrics with said bleaching composition and/or in the step where said fabrics are contacted with said bleaching composition and/or after the step where said fabrics are contacted with said bleaching composition and before the rinsing step and/or after the rinsing step.

[0173] In another embodiment of the present invention the process of bleaching fabrics comprises the step of contacting fabrics with a liquid bleaching composition according to the present invention, in its neat form and allowing said fabrics to remain in contact with said bleaching composition for a period of time sufficient to bleach said fabrics, typically 5 seconds to 30 minutes, preferably 1 minute to 10 minutes and then rinsing said fabrics with water. If said fabrics are to be washed, i.e., with a conventional composition comprising at least one surface active agent, said washing may be conducted before or after that said fabrics have been bleached. Advantageously, the present invention provides liquid bleaching compositions that may be applied neat onto a fabric to bleach, despite a standing prejudice against using bleach-containing compositions neat on fabrics since the present compositions are safe to colors and fabrics perse.

[0174] Alternatively instead of following the neat bleaching method as described herein above (pretreater application) by a rinsing step with water and/or a conventional washing step with a liquid or powder conventional detergent, the bleaching pre-treatment operation may also be followed by the diluted bleaching process as described herein before either in bucket (hand operation) or in a washing machine.

[0175] It is preferred to perform the bleaching processes herein after said fabrics have been washed with a conventional laundry detergent composition. Indeed, it has been observed that bleaching said fabrics with the compositions according to the present invention (typically diluted bleaching methods) after to washing them with a detergent composition provides superior whiteness and stain removal with less energy and detergent than if said fabrics are bleached first then washed.

[0176] In another embodiment the present invention also encompasses a process of treating a hard-surface, as the inanimate surface. In such a process a composition, as defined herein, is contacted with the hard-surfaces to be treated. Thus, the present invention also encompasses a process of treating a hard-surface with a composition, as defined herein, wherein said process comprises the step of applying said composition to said hard-surface, preferably only soiled portions thereof, and optionally rinsing said hard-surface.

[0177] In the process of treating hard-surfaces according to the present invention the composition, as defined herein, may be applied to the surface to be treated in its neat form or in its diluted form typically up to 200 times their weight of water, preferably into 80 to 2 times their weight of water, and more preferably 60 to 2 times.

[0178] When used as hard surfaces bleaching/disinfecting compositions the compositions of the present invention are easy to rinse and provide good shine characteristics on the treated surfaces.

[0179] By "hard-surfaces", it is understood any hard-surfaces as mentioned herein before as well as dishes.

Perfume formulation examples

[0180] The following are perfume formulations examples according to the present invention which are incorporated in the following laundry and cleaning compositions:

Perfume A	%	
AMYL SALICYLATE	10.00	
BENZYL SALICYLATE	30.00	
HEXYL SALICYLATE	35.00	
CITRONELLOL*	15.00	15.00
FLORALOL*	7.00	7.00
HABANOLIDE 100%*	2.00	2.00
PRENYL ACETATE*	1.00	1.00
Total >>>	100.00	25.00

[0181] Perfume A contains 25% by weight of unsaturated perfume ingredient having a bleach stability index (BSI) of at least 80%, an odour character of value A or B and an odour intensity of at least 6.

Perfume B	%	
AMYL SALICYLATE	5.00	
ANISIC ALDEHYDE	3.00	
BENZYL SALICYLATE	7.00	
CITRONELLOL*	12.00	12.00
DIPHENYL OXIDE	1.00	
FLOROPAL	5.00	
FRUTINAT*	2.50	2.50
ISO E SUPER*	9.00	9.00
ISOANANAT 660567*	1.50	1.50
KOAVONE*	8.00	8.00
LINALOOL*	10.00	10.00
METHYL DIHYDRO JASMONATE	9.00	
PHENYL ETHYL ALCOHOL	15.00	
ROSE NITRILE*	1.00	1.00
TERPINEOL*	10.00	10.00
UNDECYLENIC ALDEHYDE*	1.00	1.00
Total >>>	100.00	55.00

[0182] Perfume B contains 55% by weight of unsaturated perfume ingredient having a bleach stability index (BSI) of at least 80%, an odour character of value A or B and an odour intensity of at least 6.

Perfume C	%	
BEAUVERTATE*	2.00	2.00
CIS 3 HEXENYL ACETATE*	1.00	1.00
CITRONELLAL*	2.00	2.00
CITRONELLOL*	15.00	15.00
COUMARIN*	4.00	4.00
FRUTINAT*	5.00	5.00
HABANOLIDE 100%*	5.00	5.00
ISO E SUPER*	8.00	8.00
METHYL DIHYDRO JASMONATE	15.00	
PHENYL ETHYL ALCOHOL	20.00	
PHENYL HEXANOL	10.00	
ROSALVA*	1.00	1.00
SANJINOL*	1.00	1.00
TERPINEOL*	8.00	8.00
UNDECAVERTOL*	3.00	3.00
Total >>>	100.00	55.00

[0183] Perfume C contains 55% by weight of unsaturated perfume ingredient having a bleach stability index (BSI) of at least 80%, an odour character of value A or B and an odour intensity of at least 6.

Perfume D	%	
BEAUVERTATE*	1.00	1.00
BORONAL .EXP*	0.50	0.50
BUTYL CINNAMIC ALDEHYDE	3.00	
CITRONELLOL*	20.00	20.00
DIHYDRO ISO JASMONATE	1.00	
FLORALOL*	20.00	20.00
GERANIOL	5.00	
HABANOLIDE 100%*	8.00	8.00
LACTOSCATONE	0.20	
LAURIC ALDEHYDE	0.30	
LINALOOL*	15.00	15.00
LYRAL	5.00	
P. T. BUCINAL	5.00	
PRENYL ACETATE	5.00	
SANDALORE*	1.00	1.00
TERPINEOL*	10.00	10.00
Total >>>	100.00	75.50

[0184] Perfume D contains 75.5% by weight of unsaturated perfume ingredient having a bleach stability index (BSI) of at least 80%, an odour character of value A or B and an odour intensity of at least 6.

Perfume E	%	
ANISIC ALDEHYDE	0.50	
BEAUVERTATE*	0.20	0.20
BORONAL .EXP*	0.50	0.50
CITRONELLOL*	3.00	3.00
COUMARIN*	1.30	1.30
FLOR ACETATE*	3.00	3.00
FLORALOL*	12.00	12.00
FRUTENE*	6.00	6.00
HABANOLIDE 100%*	12.00	12.00

HEXYL CINNAMIC ALDEHYDE	12.00	
HEXYL CROTONATE*	5.00	5.00
ISO E SUPER*	10.00	10.00
KOAVONE*	13.00	13.00
LINALOOL*	2.50	2.50
NEOBUTENONE 10%*	0.20	0.02
PARA HYDROXY PHENYL BUTANONE	0.20	
SANDALORE*	0.60	0.60
TERPINEOL*	10.00	10.00
VERDOX	1.00	
VERTOFIX COEUR*	7.00	7.00
Total >>>	100.00	86.12

[0185] Perfume E contains 86.12% by weight of unsaturated perfume ingredient having a bleach stability index (BSI) of at least 80%, an odour character of value A or B and an odour intensity of at least 6.

Perfume F	**%**	
ALPHA DAMASCONE*	0.20	0.20
CITRONELLOL*	15.00	15.00
COUMARIN*	3.00	3.00
DIHYDRO MYRCENOL*	5.00	5.00
ETHYL SAFRANATE*	2.00	2.00
FLOR ACETATE*	4.00	4.00
FLORALOL*	10.00	10.00
FRUTENE*	3.00	3.00
FRUTINAT*	3.00	3.00
GIVESCONE*	1.00	1.00
GYRANE*	1.00	1.00
HABANOLIDE 100%*	5.00	5.00
HEXYL CROTONATE*	5.00	5.00
ISO E SUPER*	5.00	5.00
KOAVONE*	12.00	12.00

LINALOOL*	5.00	5.00
MYRCENYL ACETATE CRUDE*	3.00	3.00
PRENYL ACETATE*	1.00	1.00
ROSE NITRILE*	0.50	0.50
TERPINEOL*	9.00	9.00
UNDECYLENIC ALDEHYDE*	1.30	1.30
VERTOFIX COEUR*	6.00	6.00
Total >>>	100.00	100.00

[0186] Perfume F contains 100% by weight of unsaturated perfume ingredient having a bleach stability index (BSI) of at least 80%, an odour character of value A or B and an odour intensity of at least 6.

Abbreviations used in the following laundry and cleaning composition Examples

[0187] In the laundry and cleaning composition examples of the invention, the enzymes levels are expressed by pure enzyme by weight of the total composition and unless otherwise specified, the detergent ingredients are expressed by weight of the total compositions, and incorporation of the perfume composition in the fully formulated composition is carried out by spray-on unless otherwise mentioned. The abbreviated component identifications therein have the following meanings:

LAS : Sodium linear C_{11-13} alkyl benzene sulphonate.
TAS : Sodium tallow alkyl sulphate.
CxyAS : Sodium C_{1x}-C_{1y} alkyl sulfate.
CxySAS : Sodium C_{1x}-C_{1y} secondary (2,3) alkyl sulfate.
CxyEz : C_{1x}-C_{1y} predominantly linear primary alcohol condensed with an average of z moles of ethylene oxide.
CxyEzS : C_{1x}-C_{1y} sodium alkyl sulfate condensed with an average of z moles of ethylene oxide.
CxEOy : Cy alcohol with an average of ethoxylation of y.
Nonionic : Mixed ethoxylated/propoxylated fatty alcohol e.g. Plurafac LF404 being an alcohol with an average degree of ethoxylation of 3.8 and an average degree of propoxylation of 4.5.
QAS : $R_2.N+(CH_3)_2(C_2H_4OH)$ with $R_2 = C_{12}$-C_{14}.
QAS 1 : $R_2.N+(CH_3)_2(C_2H_4OH)$ with $R_2 = C_8$-C_{11}.
SADS : Sodium C14-22 alkyl disulphate of fromula 2-(R).C4H7-1,4-(SO4-)2 where R=C10-18
MBAS : C12-18 mid branched alkyl sulphate surfactant with an average branching of 1.5 methyl or ethyl branching groups
MES : x-Sulpho methylester of C18 fatty acid
APA : C_{8-10} amido propyl dimethyl amine.
Soap : Sodium linear alkyl carboxylate derived from a 80/20 mixture of tallow and coconut fatty acids.
STS : Sodium toluene sulphonate.
TFAA : C_{16}-C_{18} alkyl N-methyl glucamide.
TPKFA : C_{12}-C_{14} topped whole cut fatty acids.
DEQA : Di-(tallow-oxy-ethyl) dimethyl ammonium chloride.
DEQA (2) : Di-(soft-tallowyloxyethyl) hydroxyethyl methyl ammonium methylsulfate.
SDASA : 1:2 ratio of stearyldimethyl amine:triple-pressed stearic acid.
DTMAMS : Ditallow dimethyl ammonium methylsulfate.
Silicate : Amorphous Sodium Silicate (SiO_2:Na_2O ratio = 1.6-3.2:1).
Metasilicate : Sodium metasilicate (SiO_2:Na_2O ratio = 1.0).
Zeolite A : Hydrated Sodium Aluminosilicate of formula $Na_{12}(A1O_2SiO_2)_{12}.27H_2O$ having a primary particle size in the range from 0.1 to 10 micrometers (Weight expressed on an anhydrous

basis).

SKS-6 : Crystalline layered silicate of formula -$Na_2Si_2O_5$.

Citrate : Tri-sodium citrate dihydrate.

Citric : Anhydrous citric acid.

Carbonate : Anhydrous sodium carbonate.

Bicarbonate : Sodium hydrogen carbonate.

Sulphate : Anhydrous sodium sulphate.

Mg Sulphate : Anhydrous magnesium sulfate.

STPP : Sodium tripolyphosphate.

TSPP : Tetrasodium pyrophosphate.

MA/AA : Random copolymer of 4:1 acrylate/maleate, average molecular weight about 70,000-80,000.

MA/AA 1 : Random copolymer of 6:4 acrylate/maleate, average molecular weight about 10,000.

AA : Sodium polyacrylate polymer of average molecular weight 4,500.

Polycarboxylate : Copolymer comprising mixture of carboxylated monomers such as acrylate, maleate and methyacrylate with a MW ranging between 2,000-80,000 such as Sokolan commercially available from BASF, being a copolymer of acrylic acid, MW4,500.

PB1 : Anhydrous sodium perborate monohydrate.

PB4 : Sodium perborate tetrahydrate of nominal formula $NaBO_3.4H_2O$.

Percarbonate : Anhydrous sodium percarbonate of nominal formula $Na_2CO_3.3H_2O_2$.

NaDCC : Sodium dichloroisocyanurate.

TAED : Tetraacetyl ethylene diamine.

NOBS : Nonanoyloxybenzene sulfonate in the form of the sodium salt.

NACA-OBS : (6-nonamidocaproyl) oxybenzene sulfonate.

LOBS : Dodecanoyloxybenzene sulfonate in the form of the Na salt.

DOBA : Dodecanoylbenzoic acid

DTPA : Diethylene triamine pentaacetic acid.

HEDP : 1,1-hydroxyethane diphosphonic acid.

DETPMP : Diethyltriamine penta (methylene) phosphonate, marketed by Monsanto under the Trade name Dequest 2060.

EDDS : Ethylenediamine-N,N'-disuccinic acid, (S,S) isomer in the form of its sodium salt

MnTACN : Manganese 1,4,7-trimethyl-1,4,7-triazacyclononane.

Photoactivated : Sulfonated zinc or alumino phtalocyanine encapsulated in dextrin soluble polymer.

Bleach PAAC : Pentaamine acetate cobalt(III) salt.

Paraffin : Paraffin oil sold under the tradename Winog 70 by Wintershall.

NaBz : Sodium benzoate.

Protease : Proteolytic enzyme sold under the tradename Savinase, Alcalase by Novo Nordisk A/S, the "protease D" variant with the substitution set N76D/S103A/V104I and the protease described in PCT application Nos. PCT/US98/22588, PCT/US98/22482 and PCT/US98/22486 with the amino acid substitution set 101 G/103A/104I/159D/232V/236H/245R/248D/252K.

Amylase : Amylolytic enzyme sold under the tradename Termamyl and Duramyl® available from Novo Nordisk A/S and those variants having improved thermal stability with amino acid deletions R181* + G182* or T183* + G184* as described in W095/35382.

Lipase : Lipolytic enzyme sold under the tradename Lipolase, Lipolase Ultra by Novo Nordisk A/S and Lipomax by Gist-Brocades.

Cellulase : Cellulytic enzyme sold under the tradename Carezyme, Celluzyme and/or Endolase by Novo Nordisk A/S.

CMC : Sodium carboxymethyl cellulose.

PVP : Polyvinyl polymer, with an average molecular weight of 60,000.

PVNO : Polyvinylpyridine-N-Oxide, with an average molecular weight of 50,000.

PVPVI : Copolymer of vinylimidazole and vinylpyrrolidone, with an average molecular weight of 20,000.

Brightener 1 : Disodium 4,4'-bis(2-sulphostyryl)biphenyl.

Brightener 2 : Disodium 4,4'-bis(4-anilino-6-morpholino-1.3.5-triazin-2-yl) stilbene-2:2'-disulfonate.

Brightener 3 : Disodium 4,4'bis (4,6-dianilino-1,3,5-triazin-2-yl)amino stilbene-2-2'-disulfonate.

Silicone antifoam : Polydimethylsiloxane foam controller with siloxane-oxyalkylene copolymer as dispersing agent with a ratio of said foam controller to said dispersing agent of 10:1 to 100:1.

Suds :	12% Silicone/silica, 18% stearyl alcohol,70% starch in granular form.
Suppressor Thickener :	High molecular weight crosslinked polyacrylates such as Carbopol offered by B.F. Goodrich Chemical Company and Polygel.
SRP 1 :	Anionically end capped poly esters.
SRP 2 :	Soil Release Polymer selected from 1) Non-cotton soil release polymer according to U. S. Patent 5,415,807, Gosselink, Pan, Kellett and Hall, issued May 16, 1995 or and/or from 2) Non-cotton soil release polymer according to US application no.60/051517.
QEA :	$bis((C_2H_5O)(C_2H_4O)_n)(CH_3)$ $-N^+-C_6H_{12}-N^+-(CH_3)$ $bis((C_2H_5O)-(C_2H_4O))_n$, wherein n = from 20 to 30.
PEI :	Polyethyleneimine with an average molecular weight of between 600-1800 and an average ethoxylation degree of 7-20 ethyleneoxy residues per nitrogen.
SCS :	Sodium cumene sulphonate.
HMWPEO :	High molecular weight polyethylene oxide.
PEG X :	Polyethylene glycol, of a molecular weight of X
PEO :	Polyethylene oxide, with an average molecular weight of 5,000.
TEPAE :	Tetreaethylenepentaamine ethoxylate.
BTA :	Benzotriazole.
pH :	Measured as a 1% solution in distilled water at 20C.

Example 1

[0188] The following granular laundry detergent compositions were prepared according to the present invention :

	I	II	III	IV	V
Spray-dried Granules					
LAS	10.0	10.0	15.0	5.0	5.0
TAS	-	1.0	-	-	-
MBAS	-	-	-	5.0	5.0
$C_{45}AS$	-	-	1.0	-	2.0
$C_{45}AE_3S$	-	-	-	1.0	-
QAS	-	-	1.0	1.0	-
DTPA, HEDP and/or EDDS	0.3	0.3	0.5	0.3	-
Mg Sulfate	0.5	0.5	0.1	-	
Citrate	-	-	-	3.0	5.0
Carbonate	10.0	7.0	15.0	-	-
Sulphate	5.0	5.0	-	-	5.0
Silicate	-	-	-	-	2.0
Zeolite A	16.0	18.0	20.0	20.0	-
SKS-6	-	-	-	3.0	5.0
MA/AA or AA	1.0	2.0	11.0	-	-
PEG 4000	-	2.0	-	1.0	-
QEA	1.0	-	-	-	1.0
Brightener 1 or 2 or 3	0.05	0.05	0.05	-	0.05
Silicone oil	0.01	0.01	0.01	-	-
Agglomerate					
Carbonate	-	-	-	-	4.0
SKS-6	6.0	-	-	-	6.0
LAS	4.0	5.0	-	-	5.0
Dry-add particulate components					
Maleic acid / carbonate / bicarbonate (40:20:40)	8.0	10.0	10.0	4.0	-

(continued)

	I	II	III	IV	V
Dry-add particulate components					
QEA	-	-	-	0.2	0.5
NACA-OBS	3.0	-	-	4.5	-
NOBS	1.0	3.0	3.0	-	-
TAED	2.5	-	-	1.5	2.5
MBAS	-	-	-	8.0	-
LAS (flake)	10.0	10.0	-	-	-
Spray-on					
Brightener 1 or 2 or 3	0.2	0.2	0.3	0.1	0.2
Perfume A	1.0	0.5	1.1	0.8	0.3
Dry-add					
Citrate	-	-	20.0	4.0	-
Percarbonate	15.0	3.0	6.0	10.0	-
Perborate	-	-	-	-	6.0
Photoactivated bleach	0.02	0.02	0.02	0.1	0.05
Enzymes (cellulase, amylase, protease and/or lipase)	0.04	0.01	0.02	0.02	0.05
Carbonate	0.0	10.0	-	-	-
Perfume A(encapsulated)	-	0.5	0.5	-	0.3
Suds suppressor	1.0	0.6	0.3	-	0.10
Soap	0.5	0.2	0.3	3.0	0.5
Citric	-	-	-	6.0	6.0
SKS-6	-	-	-	4.0	-
Fillers up to 100%					

Example 2

[0189] The following granular laundry detergent compositions were prepared according to the present invention :

	I	II	III	IV
Blown powder				
MES	2.0	0.5	1.0	-
SADS	-	-	-	2.0
LAS	6.0	5.0	11.0	6.0
TAS	2.0	-	-	2.0
Zeolite A	24.0	-	-	20.0
STPP	-	27.0	24.0	-
Sulfate	4.0	6.0	13.0	-
MA/AA	1.0	4.0	6.0	2.0
Silicate	1.0	7.0	3.0	3.0
CMC	1.0	1.0	0.5	0.6
Brightener 1	0.2	0.2	0.2	0.2
Silicone antifoam	1.0	1.0	1.0	0.3
DTPMP	0.4	0.4	0.2	0.4

(continued)

	I	II	III	IV
Spray on				
Brightener 1 or 2 or 3	0.02	-	-	0.02
C45E7	-	-	-	5.0
C45E2	2.5	2.5	2.0	-
C45E3	2.6	2.5	2.0	-
Perfume B	0.5	0.3	0.5	0.2
Silicone antifoam	0.3	0.3	0.3	-
Dry additives				
QEA	-	-	-	1.0
EDDS	0.3	-	-	-
Sulfate	2.0	3.0	5.0	10.0
Carbonate	6.0	13.0	15.0	14.0
Citric	2.5	-	-	2.0
QAS	0.5	-	-	0.5
SKS-6	10.0	-	-	-
Percarbonate	4.0	3.0	-	1.9
PB4	-	-	-	
NOBS	0.5	-	-	0.3
TAED	0.75	4.5	-	0.5
Clay	-	-	10.0	-
Protease	0.03	0.03	0.03	0.03
Lipase	0.008	0.008	0.008	0.004
Amylase	0.003	-	0.003	0.006
Brightener 1	0.05	-	-	0.05
				Misc/minor and speckles

Example 3

[0190] The following granular laundry detergent compositions were prepared according to the invention :

	I	II	III	IV	V	VI
Blown powder						
LAS	23.0	8.0	7.0	9.0	7.0	7.0
QAS	-	-	-	-	1.0	-
C45AS	6.0	6.0	5.0	8.0	-	-
C45AE11S	-	1.0	1.0	1.0	-	-
MES	2.0	-	-	-	2.0	4.0
Zeolite A	10.0	18.0	14.0	12.0	10.0	10.0
MA/AA	-	0.5	-	-	-	2.0
MA/AA 1	7.0	-	-	-	-	-
AA	-	3.0	3.0	2.0	3.0	3.0
Sulfate	5.0	6.3	11.1	11.0	11.0	18.1
Silicate	10.0	1.0	1.0	1.0	1.0	1.0
Carbonate	15.0	20.0	10.0	20.7	8.0	6.0
PEG 4000	0.4	1.5	1.5	1.0	1.0	1.0
DTPA	-	0.9	0.5	-	-	0.5
Brightener 2	0.3	0.2	0.3	-	0.1	0.3

(continued)

	I	II	III	IV	V	VI
Spray on						
C45E7	-	2.0	-	-	2.0	2.0
C25E9	3.0	-	-	-	-	-
C23E9	-	-	1.5	2.0	-	2.0
Perfume C	0.3	0.3	0.3	2.0	0.3	0.3
Agglomerates						
C45AS	-	5.0	5.0	2.0	-	5.0
LAS	-	2.0	2.0	-	-	2.0
Zeolite A	-	7.5	7.5	8.0	-	7.5
Carbonate	-	4.0	4.0	5.0	-	4.0
PEG 4000	-	0.5	0.5	-	-	0.5
Misc (water etc)	-	2.0	2.0	2.0	-	2.0
Dry additives						
QAS I	-	-	-	-	1.0	-
Citric	-	-	-	-	2.0	-
PB4	-	-	-	-	5	-
PB1	-	-	4	1.0	-	-
Percarbonate	2.0	-	-	1.0	-	2.0
Carbonate	-	5.3	1.8	-	4.0	4.0
NOBS	0.5	-	0.4	0.3	-	-
Clay	-	-	-	-	-	10.0
TAED	0.6	0.4	0.6	0.3	0.9	-
Methyl cellulose	0.2	-	-	-	-	0.5
DTPA	0.7	0.5	1.0	0.5	0.5	1.2
speckle	-	-	-	0.2.	0.5	-
SKS-6	8.0	-	-	-	-	-
STS	-	-	2.0	-	1.0	-
Cumene sulfonic acid	-	1.0	-	-	-	2.0
Lipase	0.004	-	0.004	-	0.004	0.008
Cellulase	0.0005	0.0005	0.0005	0.0007	0.0005	0.0005
Amylase	0.003	-	0.001	-	0.003	-
Protease	0.01	0.015	0.015	0.009	0.01	0.01
PVPVI	-	-	-	-	0.5	0.1
PVP	-	-	-	-	0.5	-
PVNO	-	-	0.5	0.3	-	-
QEA	-	-	-	-	1.0	-
SRP1	0.2	0.5	0.3	-	0.2	-
Silicone antifoam	0.2	0.4	0.2	0.4	0.1	-
Mg sulfate	-	-	0.2	-	0.2	-
Misc/minors up to 100%						

Example 4

[0191] The following granular laundry detergent compositions were prepared according to the present invention:

	I	II	III	IV
Base granule				
STPP	-	22.0	-	15.0
Zeolite A	30.0	-	24.0	5.0
Sulfate	5.5	5.0	7.0	7.0
MA/AA	3.0	-	-	-
AA	-	1.6	2.0	-
MA/AA 1	-	12.0	-	6.0
LAS	14.0	10.0	9.0	20.0
C45AS	8.0	7.0	9.0	7.0
C45AE11S	-	1.0	-	1.0
MES	0.5	4.0	6.0	-
SADS	2.5	-	-	1.0
Silicate	-	1.0	0.5	10.0
Soap	-	2.0	-	-
Brightener 1	0.2	0.2	0.2	0.2
Carbonate	6.0	9.0	8.0	10.0
PEG 4000	-	1.0	1.5	-
DTPA	-	0.4	-	-
Spray on				
C25E9	-	-	-	5.0
C45E7	1.0	1.0	-	-
C23E9	-	1.0	2.5	-
Perfume D	0.2	0.3	0.3	0.3
Dry additives				
Carbonate	5.0	10.0	13.0	8.0
PVPVI/PVNO	0.5	-	0.3	-
Protease	0.03	0.03	0.03	0.015
Lipase	0.008	-	-	0.008
Amylase	0.002	-	-	0.002
Cellulase	0.0002	0.0005	0.0005	0.0003
DTPA	0.5	0.3	0.5	1.0
LOBS	-	0.8	-	0.3
PB1	5	3.0	10	4.0
DOBA	1.0	-	0.4	-
TAED	0.5	0.3	0.5	0.6
Sulfate	4.0	5.0	-	5.0
SRP 1	-	0.4	-	-
Suds supressor	-	0.5	-	-
speckle	09	-	2.7	1.2
Misc/minor to 100%				

Example 5

[0192] The following granular laundry detergent compositions were prepared according to the present invention :

	I	II	III	IV	IV	V	VI
C_{13}LAS	12.0	16.0	23.0	19.0	18.0	20.0	16.0
C_{45}AS		4.5	-		-	-	4.0

(continued)

	I	II	III	IV	IV	V	VI
C_{45}AE(3)S	-	-	2.0	-	1.0	1.0	1.0
C_{45}AE(3.0)	2.0	2.0	-	1.3	-	-	0.6
C9-C14 alkyl dimethyl hydroxy ethyl quaternary ammonium salt			-	-	1.0	0.5	2.0
Tallow fatty acid	-	-	-	-	-	-	1.0
STPP	23.0	25.0	24.0	22,0	20.0	15.0	20.0
Carbonate	15.0	12.0	15.0	10.0	13.0	11.0	10.0
AA	0.5	0.5	0.5	0.5	-	-	-
MA/AA	-	-	1.0	1.0	1.0	2.0	0.5
Silicate	3.0	6.0	9.0	8.0	9.0	6.0	8.0
Sulfate	25.0	18.0	20.0	18.0	20.0	22.0	13.0
Sodium perborate	5.0	5.0	10.0	8.0	3.0	1.0	2.0
PEG 4000	1.5	1.5	1.0	1.0	-	-	0.5
CMC	1.0	1.0	1.0	-	0.5	0.5	0.5
Citric	-	-	-	-	-	-	-
NOBS/ DOBS	0.5	1.0	0.5	0.5	1.0	0.7	0.3
TAED	1.5	1.0	2.5	3.0	0.3	0.2	0.5
SRP 2	1.5	1.5	1.0	1.0	1.0	1.0	1.0
Moisture	7.5	7.5	6.0	7.0	5.0	3.0	5.0
Mg	-	-	-	-	1.0	0.5	1.5
DTPA, HEDP and/or EDDS	-	-	-	-	0.8	0.6	1.0
Enzymes (amylase, cellulase and/or protease)	-	-	-	-	0.05	0.04	0.05
Perfume E	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Minors, e.g. Brightener, photo-bleach, speckles	Up to 100 %						

Example 6

[0193] The following granular laundry detergent compositions were prepared according to the present invention:

	I	II	III	IV
C_{13}LAS	13.3	13.7	10.4	8.0
C_{45}AS	3.9	4.0	4.5	-
C_{45}AE (0.5)S	2.0	2.0	-	-
C_{45}AE(6.5)	0.5	0.5	0.5	5.0
C9-C14 alkyl dimethyl hydroxy ethyl quaternary ammonium salt	1.0	-	-	0.5
Tallow fatty acid	0.5	-	-	-
Tallow alcohol ethoxylate (50)	-	-	1.0	0.3
STPP	-	41.0	-	20.0
Zeolite A	26.3	-	21.3	1.0
Carbonate	23.9	12.4	25.2	17.0
AA	3.4	0.0	2.7	-
MA/AA	-	-	1.0	1.5
Silicate	2.4	6.4	2.1	6.0
Sulfate	10.5	10.9	8.2	15.0
Sodium perborate	1.0	1.0	1.0	2.0
PEG 4000	1.7	0.4	1.0	-
CMC	1.0	-	-	0.3
Citric	-	-	3.0	-

(continued)

	I	II	III	IV
NOBS/ DOBS	0.2	0.5	0.5	0.1
TAED	0.6	0.5	0.4	0.3
SRP 2	1.5	1.5	1.0	1.0
Moisture	7.5	3.1	6.1	7.3
Mg sulphate	-	-	-	1.0
DTPA, HEDP and/or EDDS	-	-	-	0.5
Enzymes (amylase, cellulase, protease and/or lipase)	-	0.025	-	0.04
Perfume F	0.2	0.2	0.2	0.2
Misc / Minors including brightener, photo-bleach	Up to 100%			

Example 7

[0194] The following laundry detergent compositions in the form of a tablet or granular formulation were prepared according to the present invention :

	I	II	III	IV	V	VI
C_{13}LAS	20.0	16.0	8.5	5	20.0	6.0
C_{45}AS	-	4.0		-	-	-
C_{45}AE(3)S	1.0	1.0	-	-	-	-
C_{45}AE	-	5.0	5.5	4.0	-	
C9-C14 alkyl dimethyl hydroxy ethyl quaternary ammonium salt	0.5	2.0	-	-	-	-
Tallow fatty acid	-	1.0	-	-	-	-
STPP / Zeolite	10.0	20.0	30.0	20.0	25.0	25.0
Carbonate	41.0	30.0	30.0	25.0	45.0	24.0
AA	-	-	-	-	-	-
MA/AA	2.0	0.5	0.5	1.0	-	-
Silicate	6.0	8.0	5.0	6.0	8.0	5.0
Sulfate	2.0	3.0	-	-	-	8.0
Sodium perborate/percarbonate	1.0	-	20.0	14.0	-	-
PEG 4000	-	0.5	-	-	-	0.5
CMC	0.5	0.5	0.5	0.5	-	0.5
Citric	-	-	-	-	-	-
NOBS/ DOBS	0.7	-	-	-	-	-
TAED / Preformed peracid	0.7	-	4.5	5.0	-	-
DTPA, HEDP and/or EDDS	-	-	0.5	0.5	-	
SRP	1.0	-	1.0	1.0	-	-
Clay	4.0	3.0	7.0	10.0	6.0	8.0
PEO	1.0	0.5	2.0	0.5	1.0	0.5
Humectant	0.5	-	-	0.5	-	-
wax	0.5	-	-	0.5	-	-
Cellulose	2.0	-	-	1.5	-	1.0
Sodium acetate	-	-	1.0	0.5	4.0	1.0
Moisture	3.0	5.0	5.0	5.0	8.0	10.0
Mg sulphate	0.5	1.5	-	-	-	-
Soap/ suds suppressor	0.6	1.0	1.0	0.8	0.5	-
Enzymes (amylase, cellulase, protease and/or lipase)	0.04	0.04	0.01	0.02	0.02	0.03
Perfume E	0.2	0.2	0.2	0.2	0.2	0.2

(continued)

	I	II	III	IV	V	VI
Minors, e.g. PVP, PVPVI/PVNO, brightener, photo-bleach, speckles,...	Up to 100%					

Example 8

[0195] The following laundry detergent compositions were prepared according to the present invention :

	I	II	III	IV	V
C_{13}LAS	12.0	16.0	23.0	19.0	18.0
C_{45}AS	-	4.5	-	-	-
C45 AE(3)S	-	-	2.0	-	1.0
C_{45}AE	2.0	2.0	-	1.3	-
C9-C14 alkyl dimethyl hydroxy ethyl quaternary ammonium salt	-	-	-	-	1.0
STPP/Zeolite	23.0	25.0	14.0	22,0	20.0
Carbonate	25.0	22.0	35.0	20.0	28.0
AA	0.5	0.5	0.5	0.5	-
MA/AA	-	-	1.0	1.0	1.0
Silicate	3.0	6.0	9.0	8.0	9.0
Sodium perborate/ percarbonate	5.0	5.0	10.0	-	3.0
PEG 4000	1.5	1.5	1.0	1.0	-
CMC	1.0	1.0	1.0	-	0.5
NOBS/ DOBS	-	1.0	-	-	1.0
TAED / Preformed peracid	1.5	1.0	2.5	-	3.0
DTPA, HEDP and/or EDDS	0.5	0.5	0.5	-	1.0
SRP	1.5	1.5	1.0	1.0	-
Clay	5.0	6.0	12.0	7.0	10.0
Flocculating agent PEO	0.2	0.2	3.0	2.0	0.1
Humectant	-	-	-	-	0.5
wax	0.5	-	-	-	-
Cellulose	0.5	2.0	-	-	3.0
Sodium acetate	2.0	1.0	3.0	-	-
Moisture	7.5	7.5	6.0	7.0	5.0
Soap/ suds suppressor	-	-	0.5	0.5	0.8
Enzymes (amylase, cellulase, protease and/or lipase)	-	-	-	-	0.045
Perfume D	0.2	0.2	0.2	0.2	0.2
Misc / Minors, e.g. PVP, PVPVI/PVNO, speckles, brightener, photo-bleach,...	Up to 100%				

Example 9

[0196] The following liquid laundry detergent compositions were prepared according to the present invention :

	I	II	III	IV	V	VI
LAS	-	-	-	1.0	2.0	-
C25AS	16.0	13.0	14.0	5.0	-	6.5
C25AE3S	5.0	1.0	-	10.0	19.0	3.0
C25E7	2.0	3.5	-	2.5	2.0	5.0
TFAA	5.0	4.5	4.5	6.5	4.0	-
APA	2.0	1.0	-	3.0	-	0.5

(continued)

	I	II	III	IV	V	VI
QAS	-	-	2.0	-	1.5	-
TPKFA	4.5	8.0	15.0	-	5.0	5.0
Citric	2.2	3.0	-	0.5	1.0	2.0
Rapeseed fatty acid	2.0	-	-	3.0	6.0	1.5
Ethanol	3.2	2.0	2.5	2.2	-	0.5
1,2 Propandiol	5.7	8.5	6.5	7.0	7.0	5.5
Monoethanolamine	5.0	7.5	-	5.0	1.0	2.0
TEPAE	-	1.2	-	0.5	0.5	-
PEI2	-	1.5	-	1.0	0.8	-
DTPMP	1.3	0.5	0.8	0.5	-	0.2
HEDP	-	0.5	0.2	1.0	-	-
Protease	0.02	0.03	0.02	0.02	0.02	0.01
Lipase	0.002	0.001	0.001	-	0.001	-
Amylase	.0008	.0006	.0006	0.002	0.001	0.001
Cellulase	0.002	0.002	-	0.002	0.001	-
SRP1	0.20	0.15	0.10	-	0.17	0.04
PVNO	-	-	-	0.05	0.10	-
Brightener 3	0.20	0.15	0.10	0.05	-	0.05
Suds Suppressor	0.25	0.20	0.15	0.15	0.30	0.10
Calcium Chloride	0.02	0.02	-	0.01	0.01	-
Boric acid	2.5	2.0	1.5	2.2	1.5	1.2
Bentonite Clay	-	-	5.5	-	-	-
NaOH to pH	8.0	7.5	7.7	8.0	7.0	7.5
Water/minors to 100%						

Example 10

[0197] The following non-aqueous liquid detergent compositions were prepared in accordance with the present invention :

	I	II	III
LAS	16.0	16.0	16.0
C23 E05S	21.5	21.5	19.0
Butoxy Propoxy Propanol	18.5	-	16.0
Hexylene Glycol	-	18.5	5.0
Sodium citrate dihydrate	6.8	6.8	3.8
[4-[N-nonanoyl-6-aminohexanoyloxy] benzene sulfonate] Na salt	6.0	6.0	6.0
Methyl sulfate salt of methyl quaternized polyethoxylated hexamethylene diamine	1.3	1.3	1.3
EDDS	1.2	1.2	1.2
MA/AA	-	-	3.0
Sodium Carbonate	10.0	10.0	10.0
Protease	0.05	0.02	0.02
Amylase	0.01	0.01	0.01
Cellulase	0.0001	0.0001	0.0001
PB1	12.0	12.0	12.0
Silicone antifoam	0.75	0.75	1.1
Perfume C	1.7	1.7	1.7
Titanium Dioxide	0.5	0.5	0.5

(continued)

	I	II	III
Dichloro -5,12-Dimethyl-1,5,8,12-tetraazabicyclo [6.6.2] hexadecane Manganese (II)	-	0.03	0.03
Brightener 2	0.2	0.2	0.2
Sodium hydrogenated C16-18 fatty soap	1	1	0.5
Colored Speckles	0.4	0.4	0.4
Miscellaneous up to 100%			

Example 11

[0198] The following laundry detergent compositions in the form of a tablet were prepared according to the present invention :

i) a detergent base powder of composition I was prepared as follows: all the particulate material of base composition I were mixed together in a mixing drum to form a homogenous particulate mixture. During this mixing, the spray-ons were carried out.
ii) Tablets were then made the following way: 50g of the matrix was introduced into a mould of circular shape with a diameter of 5.5 cm, and compressed to give a tablet tensile strength (or diametrical fracture stress) of 10kPa.
iii) The tablets were then dipped in a bath comprising 90 parts of sebacic acid and 10 parts per weight of Nymcel-ZSBI6™ by Metsa Serla at 140 °C. The time the tablet was dipped in the heated bath was adjusted to allow application of 4g of the bath mixture. The tablet was then left to cool at ambient temperature of 25°C for 24 hours. The tensile strength of the coated tablet was increased to a tensile strength of 30 kPa.

	I
Anionic agglomerates 1 (40% anionic, 27% zeolite and 33% carbonate)	21.5
Anionic agglomerates 2 (40% anionic, 28% zeolite and 32% carbonate)	13.0
Cationic agglomerates (20% cationic, 56% zeolite and 24% sulphate)	5.5
Layered silicate (95% SKS 6 and 5% silicate)	10.8
Sodium percarbonate	14.2
Bleach activator agglomerates (81% TAED, 17% acrylic/maleic copolymer (acid form) and 2% water)	5.5
Carbonate	10.98
EDDS/Sulphate particle (58% of EDDS, 23% of sulphate and 19% water)	0.5
HEDP	0.8
SRP	0.3
Fluorescer	0.2
Photoactivated bleach (Zinc phthalocyanine sulphonate 10% active)	0.02
Soap powder	1.4
Suds suppressor (11.5% silicone oil; 59% of zeolite and 29.5% of water)	1.9
Citric	7.1
Protease	0.03
Lipase	0.006
Cellulase	0.0005
Amylase	0.02
Binder spray-on system (25% of Lutensit K-HD 96;75% by weight of PEG)	4.0

Example 12

[0199] The following laundry bar detergent compositions were prepared according to the present invention (Levels are given in parts per weight, enzyme are expressed in pure enzyme):

	I	II	III	IV	V	VI	VII	VIII
LAS	-	-	19.0	15.0	21.0	6.75	8.8	-
C28AS	30.0	13.5	-	-	-	15.75	11.2	22.5
Na Laurate	2.5	9.0	-	-	-	-	-	-
Zeolite A	2.0	1.25	-	-	-	1.25	1.25	1.25
Carbonate	20.0	3.0	13.0	8.0	10.0	15.0	15.0	10.0
Ca Carbonate	27.5	39.0	35.0	-	-	40.0	-	40.0
Sulfate	5.0	5.0	3.0	5.0	3.0	-	-	5.0
TSPP	5.0	-	-	-	-	5.0	2.5	-
STPP	5.0	15.0	10.0	-	-	7.0	8.0	10.0
Bentonite clay	-	10.0	-	-	5.0	-	-	-
DETPMP	-	0.7	0.6	-	0.6	0.7	0.7	0.7
CMC	-	1.0	1.0	1.0	1.0	-	-	1.0
Talc	-	-	10.0	15.0	10.0	-	-	-
Silicate	-	-	4.0	5.0	3.0	-	-	-
PVNO	0.02	0.03	-	0.01	-	0.02	-	-
MA/AA	0.4	1.0	-	-	0.2	0.4	0.5	0.4
SRP 1	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3
Amylase	-	-	0.01	-	-	-	0.002	-
Protease	-	0.004	-	0.003	0.003	-	-	0.003
Lipase	-	0.002	-	0.002	-	-	-	-
Cellulase	-	.0003	-	-	.0003	.0002	-	-
PEO	-	0.2	-	0.2	0.3	-	-	0.3
Perfume E	1.0	0.5	0.3	0.2	0.4	0.4	0.4	0.4
Mg sulfate	-	-	3.0	3.0	3.0	-	-	-
Brightener	0.15	0.1	0.15	-	-	-	-	0.1
Photoactivated bleach (ppm)	-	15.0	15.0	15.0	15.0	-	-	15.0

Example 13

[0200] The following granular fabric detergent compositions which provide "softening through the wash" capability were prepared according to the present invention :

	I	II
C45AS	-	10.0
LAS	7.6	-
C68AS	1.3	-
C45E7	4.0	-
C25E3	-	5.0
Coco-alkyl-dimethyl hydroxy-ethyl ammonium chloride	1.4	1.0
Citrate	5.0	3.0
Na-SKS-6	-	11.0
Zeolite A	15.0	15.0
MA/AA	4.0	4.0
DETPMP	0.4	0.4
PB1	15.0	-
Percarbonate	-	15.0
TAED	5.0	5.0
Smectite clay	10.0	10.0
HMWPEO	-	0.1
Protease	0.02	0.01

(continued)

	I	II
Lipase	0.02	0.01
Amylase	0.03	0.005
Cellulase	0.001	-
Silicate	3.0	5.0
Carbonate	10.0	10.0
Suds suppressor	1.0	4.0
CMC	0.2	0.1
		Miscellaneous and min Up to 100

Example 14

[0201] The following rinse added fabric softener composition was prepared according to the present invention :

DEQA (2)	20.0
Cellulase	0.001
HCL	0.03
Antifoam agent	0.01
Blue dye	25ppm
$CaCl_2$	0.20
Perfume E	0.90
Miscellaneous and water	Up to 100%

Example 15

[0202] The following fabric softener and dryer added fabric conditioner compositions were prepared according to the present invention :

	I	II	III	IV	V
DEQA	2.6	19.0	-	-	-
DEQA(2)	-	-	-	-	52.0
DTMAMS	-	-	-	26.0	-
SDASA	-	-	70.0	42.0	40.2
Stearic acid of IV=0	0.3	-	-	-	-
C45EO1-3	-	-	13.0	-	-
HCL	0.02	0.02	-	-	-
Ethanol	-	-	1.0	-	-
Perfume F	0.3	1.0	0.75	1.0	1.5
Glycoperse S-20	-	-	-	-	15.4
Glycerol monostearate	-	-	-	26.0	-
Digeranyl Succinate	-	-	0.38	-	-
Silicone antifoam	0.01	0.01	-	-	-
Electrolyte	-	0.1	-	-	-
Clay	-	-	-	3.0	-
Dye	10ppm	25ppm	0.01	-	-
Water and minors	100%	100%	-	-	-

Example 16

[0203] The following compact high density (0.96Kg/l) dishwashing detergent compositions were prepared according to the present invention :

	I	II	III	IV	V	VI
STPP	-	51.0	51.0	-	-	44.3
Citrate	17.0	-	-	50.0	40.2	-
Carbonate	17.5	14.0	20.0	-	8.0	33.6
Bicarbonate	-	-	-	26.0	-	-
Silicate	15.0	15.0	8.0	-	25.0	3.6
Metasilicate	2.5	4.5	4.5	-	-	-
PB1	10.0	8.0	8.0	-	-	-
PB4	-	-	-	10.0	-	-
Percarbonate	-	-	-	-	11.8	4.8
Nonionic	2.0	1.5	1.5	3.0	1.9	5.9
TAED	2.0	-	-	4.0	-	1.4
HEDP	1.0	-	-	-	-	-
DETPMP	0.6	-	-	-	-	-
MnTACN	-	-	-	-	0.01	-
PAAC	-	0.01	0.01	-	-	-
Paraffin	0.5	0.4	0.4	0.6	-	-
Protease	0.07	0.05	0.05	0.03	0.06	0.01
Lipase	-	0.001	-	0.005	-	-
BTA	0.3	0.2	0.2	0.3	0.3	0.3
Polycarboxylate	6.0	-	-	-	4.0	0.9
Perfume B	0.2	0.1	0.1	0.2	0.2	0.2
pH	11.0	11.0	11.3	9.6	10.8	10.9
Miscellaneous, sulfate and water				Up to 100%		

Example 17

[0204] The following granular dishwashing detergent compositions of bulk density 1.02Kg/L were prepared according to the present invention :

	I	II	III	IV	V	VI
STPP	30.0	33.5	27.9	29.6	33.8	22.0
Carbonate	30.5	30.5	30.5	23.0	34.5	45.0
Silicate	7.0	7.5	12.6	13.3	3.2	6.2
Metasilicate	-	4.5	-	-	-	-
Percarbonate	-	-	-	-	4.0	-
PB1	4.4	4.5	4.3	-	-	-
NADCC	-	-	-	2.0	-	0.9
Nonionic	1.0	0.7	1.0	1.9	0.7	0.5
TAED	1.0	-	-	-	0.9	-
PAAC	-	0.004	-	-	-	-
Paraffin	0.25	0.25	-	-	-	-
Protease	0.036	0.021	0.03	-	0.006	-
Amylase	0.03	0.005	0.004	-	0.005	-
Lipase	0.005	-	0.001	-	-	-
BTA	0.15	0.15	-	-	0.2	-
Perfume A	0.2	0.2	0.05	0.1	0.2	0.2
pH	10.8	11.3	11.0	10.7	11.5	10.9
Miscellaneous, sulfate and water				Up to 100%		

Example 18

[0205] The following tablet detergent compositions were prepared according to the present invention by compression of a granular dishwashing detergent composition at a pressure of 13KN/cm^2 using a standard 12 head rotary press:

	I	II	III	IV	V	VI	VII	VII
STPP	-	48.8	54.7	38.2	-	52.4	56.1	36.
Citrate	20.0	-	-	-	35.9	-	-	-
Carbonate	20.0	5.0	14.0	15.4	8.0	23.0	20.0	28.
Silicate	15.0	14.8	15.0	12.6	23.4	2.9	4.3	4.
Protease	0.042	0.072	0.042	0.031	0.052	0.023	0.023	0.0
Amylase	0.012	0.012	0.012	0.007	0.015	0.003	0.017	0.0
Lipase	0.005	-	-	-	-	-	-	-
PB1	14.3	7.8	11.7	12.2	-	-	6.7	8.
PB4	-	-	-	-	22.8	-	3.4	-
Percarbonate	-	-	-	-	-	10.4	-	-
Nonionic	1.5	2.0	2.0	2.2	1.0	4.2	4.0	6.
PAAC	-	-	0.02	0.009	-	-	-	-
MnTACN	-	-	-	-	0.007	-	-	-
TAED	2.7	2.4	-	-	-	2.1	0.7	1.
HEDP	1.0	-	-	0.9	-	0.4	0.2	-
DETPMP	0.7	- - - - - -						-
Paraffin	0.4	0.5	0.5	0.5	-	-	0.5	-
BTA	0.2	0.3	0.3	0.3	0.3	0.3	0.3	-
Polycarboxylate	4.0	-	-	-	4.9	0.6	0.8	-
PEG 4,000-30,000	-	-	-	-	-	2.0	-	2.
Glycerol	-	-	-	-	-	0.4	-	0.
Perfume C	0.2	0.2	0.2	0.05	0.2	0.2	0.2	0.
Weight of tablet	20g	25g	20g	30g	18g	20g	25g	24
pH	10.7	10.6	10.7	10.7	10.9	11.2	11.0	10.
Miscellaneous, sulfate and water	Up to 100%							

Example 19

[0206] The following liquid dishwashing detergent compositions of density 1.40Kg/L were prepared according to the present invention :

	I	II	III	IV
STPP	17.5	17.2	23.2	23.1
Carbonate	-	2.4	-	-
Silicate	6.1	24.9	30.7	22.4
NaOCl	1.1	1.1	1.1	1.2
Thickener	1.0	1.1	1.1	1.0
Nonionic	-	0.1	0.06	0.1
NaBz	0.7	-	-	-
NaOH	1.9	-	-	-
KOH	3.6	3.0	-	-
Perfume D	0.05	0.1	0.05	0.05
pH	11.7	10.9	10.8	11.0
Water	up to 100%			

Example 20

[0207] The following dishwashing compositions in the tablet form were prepared according to the present invention (Levels are indicated in g):

	I	II	III	IV	V	VI
Phase 1						
STPP	9.6	9.6	10.4	9.6	9.6	11.5
Silicate	0.5	0.7	1.6	1.0	1.0	2.4
SKS-6	1.5	1.50		2.30	2.25	
Carbonate	2.3	2.7	3.5	3.6	4.1	5.2
HEDP	0.2	0.2	0.2	0.3	0.3	0.3
PB1	2.4	2.4	2.4	3.7	3.7	3.7
PAAC	0.002	0.002	0.002	0.003	0.004	0.004
Amylase	0.002	0.001	0.001	0.004	0.003	0.003
Protease	0.002	0.002	0.002	0.003	0.003	0.003
Nonionic	0.4	0.8	0.8	1.2	1.2	1.2
PEG 6000	0.4	0.3	0.3	0.4	0.4	0.4
BTA	0.04	0.04	0.04	-	0.06	0.06
Paraffin	0.1	0.1	0.1	0.15	0.15	0.15
Perfume F	0.02	0.02	0.02	0.01	0.01	0.01
Sulphate	-	-	-	0.5	0.05	2.3
Phase 2						
Amylase	0.0005	0.0005	0.0004	0.0005	0.006	0.0004
Protease	0.009	0.008	0.01	0.009	0.008	0.01
Citric	0.3		0.3	0.3		0.30
Sulphamic acid	-	0.3	-	-	0.3	-
Bicarbonate	1.1	0.4	0.4	1.1	0.4	0.4
Carbonate	-	0.5	-	-	0.5	-
Silicate	-	-	0.6	-	-	0.6
CaCl2	-	0.07	-	-	0.07	-
PEG 3000	0.06	0.06	0.06	0.06	0.06	0.06

[0208] The multi-phase tablet compositions are prepared as follows. The detergent active composition of phase 1 is prepared by admixing the granular and liquid components and is then passed into the die of a conventional rotary press. The press includes a punch suitably shaped for forming the mould. The cross-section of the die is approximately 30x38 mm. The composition is then subjected to to a compression force of 940 kg/cm2 and the punch is then elevated exposing the first phase of the tablet containing the mould in its upper surface. The detergent active composition of phase 2 is prepared in similar manner and is passed into the die. The particulate active composition is then subjected to a compression force of 170 kg/cm2, the punch is elevated, and the multi-phase tablet ejected from the tablet press. The resulting tablets dissolve or disintegrate in a washing machine as described above within 12 minutes, phase 2 of the tablets dissolving within 5 minutes. The tablets provide excellent dissolution and cleaning characteristics together with good tablet integrity and strength.

Example 21

[0209] The following manual dishwashing compositions were prepared according to the present invention :

	I	II	III	IV	V	VI	VII	VIII
C12-14E0-3S	26.0	34.2	25.0	26.0	37.0	26.0	22.0	32.0
C11LAS	-	-	-	-	-	-	13.0	-
C12-14 amine oxide	2.0	4.9	2.1	6.5	5.5	6.5	1	-

(continued)

	I	II	III	IV	V	VI	VII	VIII
C12-14 betaine	2.0	5.0	2.1	-	-	-	-	4.0
C12-14 glucose amide	1.5	1.5	3.1	-	-	-	-	-
C9-11E8-9	4.5	1	4.1	3.0	1.0	3.0	-	1.0
Alkyl Polyglucoside	-	-	-	-	-	-	12.0	3.0
C1-20 Mono Ethanol Amine	-	-	-	-	-	-	1.5	-
DTPA	-	0.1	0	0-500 ppm	0-500 ppm	0-500 ppm	0	0
Succinic acid	-	-	-	-	-	0	-	4.5
Cumene sulphonate	-	-	4.5	1 to 6	-	1 to 6	-	-
Ca ou Na xylene Sulphonate	-	5.0	-	-	4.0	-	2.5	-
Mg salts (in % Mg)	0.5	0.7	0.5	0.04	0.6	0.04	0.3	0
1,3 bis (methylamino) cyclohexane	-	-	-	0.5	-	0.5	-	-
N.N-dimethylamino ethyl methacrylate homopolymer	-	-	-	0.2	-	0.2	-	-
Citric	-	-	-	0-3.5		0-3.5	-	-
Ethanol	6-8	5-8	6-9	4-10	7.0	4-10	4.0	4.0
Protease	-	-	-	0-0.08	-	0-0.08	-	-
Amylase	-	-	-	0.002	-	0.005	0.04	0.05
Carbonate	-	-	-	-	-	2.5	-	-
Poly Propylene Glycol (MW2000-4000)	-	-	-	0 to 2	-	-	-	-
pH	7-8	7- 8	7-8	8.5-11	7-8	8.5-11	7	7
Perfume E	0.1-0.7	0.1-0.7	0.1-0.7	0.1-0.7	0.1-0.7	0.1-0.7	0.1-0.7	0.1-0.7
Balance (water and minors)	Up to 100%							

Example 22

[0210] The following are hard surface compositions according to the present invention:

	I	II	III
Form of the composition	Wipe	Spray	Liquid
H2O2	1.0	1.5	1.0
Na tetraborate 10.H2O	-	1.0	-
C10 Amine Oxide	-	0.9	0.9
C12-14 alkyl dimethyl amine oxide	0.4	-	-
C7-10 Alkyl Sulphate	-	-	6.0
C9-11EO10	-	0.05	-
C8-18 Fatty acid	-	0.1	0.2
Ethanol	9.0	1.0	2.5
Benzyl alcohol	-	0.8	-
Propylene or diethylene glycol butyl ether	1.0	1.5	-
Poly(propylene glycol) monobutyl ether	0.2	-	-
HEDP	-	0.1	-
Butylated hydroxytoluene	0.01	0.06	0.03
Salicyclic acid	0.03	-	0.07
Perfume E	0.1	0.3	0.3
Citric	0.7	-	1.5

(continued)

	I	II	III
Dye	-	-	2.0
NaOH	-	0.1	-
Miscellaneous and water	--------------------up to 100% --------------------		

Example 23

[0211] The following is a hard surface composition according to the present invention:

	I
H2O2	4.0
Tetra ethyl pentamine ethylene oxide	1.0
C8 Alkyl sulfate	3.0
Isopropyl alcohol	3.0
Propyl Gallate	0.03
Salicyclic acid	0.5
Dimethyl triamine penta (methylene phosphonic acid)	0.2
Perfume F	0.1
Miscellaneous and water	----- 100% -----

Example 24

[0212] The following are laundry detergent compositions according to the present invention:

	I	II
C10 Alkyl sulfate	-	1.6
C9-C11 EO10	-	1.7
C12-C13 EO3	-	1.5
Sodium sulfate	18.47	-
Sodium bicarbonate	18.60	-
Polycarboxylate (EW base)	4.14	-
C18 Alpha Olefin	0.25	-
Enzyme blend	0.70	-
Brigthener 49	0.11	-
Quantum (zinc phthalocyanine sulfonate)	0.04	-
Coated sodium percarbonate	45.0	-
TAED agglomerate (activator)	8.72	-
H2O2	-	6.8
n-propyl gallate (Nipanox)	-	0.5
HEDP	-	0.16
2-butyl octanol (Isofol 12)		0.5
Citric acid	2.5	-
Perfume D	0.11	0.16
Miscellaneous and water	----------- 100% -----------	

Example 25

[0213] The following is a laundry detergent composition according to the present invention:

	I
Sodium hypochlorite ($AvCl_2$)	3
Sodium hydroxyide	1.2
Sodium silicate (SiO_2)	0.5
Sodium metaborate	0.5 - 2
Sodium tripolyphosphate	0.065
m-methoxy benzoic acid	0 - 0.5
Sodium p-toluenesulfonate	0 - 5
Alkyl ether sulfate	3 - 6
Brightener	0.01 - 0.05
Pigment	0.009
Capped ethoxy-buthoxylated fatty alcohol	0.3
Coconut alkylcarboxylate (Fatty acid)	0.3
Perfume A	0.1
Miscellaneous and water	------ 100% ------

Example 26

[0214] The following are hard surface compositions according to the present invention:

	I	II	III	IV	V	VI	VII	VIII	IX
C9-C11 EO5	-	-	-	-	-	-	2.5	1.92	1.7
C12-C14 EO5	-	-	-	-	-	-	2.5	2.88	1.7
C12-C14 EO21	-	-	-	-	-	-	2.0	0.8	1.7
C12 - C14 alkyl sulfate	-	-	0.24	-	0.3	0.3	-	-	-
Branched alkyl sulfate	3.5	3.5	-	-	-	-	-	-	-
C12-C14 amine oxide	0.70	0.70	-	-	-	-	-	-	-
C12-C14-C16 amino oxide	-	-	-	2.1	-	-	-	-	-
NaLAS	-	-	-	-	-	-	0.8	-	-
n-Butoxy-propanol	2.0	5.8	2.0	-	-	-	-	-	-
Amino-methyl-propanol	-	-	0.025	-	-	-	-	-	-
2-butyl-octanol (Isofol 12)	-	-	-	-	-	-	0.3	0.3	0.25
Sodium parafin sulfonate	-	-	-	-	-	-	-	-	1.0
Sodium cumene sulfate	-	-	-	-	-	-	1.5	2.6	0.75
Sodium C7 - C9 sulfate	-	-	-	0.9	3.0	3.0	-	-	-
Sodium silicate	-	-	-	0.4	0.04	0.04	-	-	-
$MgSO_4$	-	-	-	-	-	-	-	0.5	-
Na_2CO_3	-	-	-	-	-	-	0.2	0.13	0.3
NaOH	-	-	-	1.0	0.87	0.87	-	0.33	-
PVP (mw 360,000)	-	-	-	-	-	-	-	-	0.5
PVP/AA(3:1)	-	-	0.040	-	-	-	-	-	-
Dimethyl PEG (mw 2000)	-	-	-	-	-	-	-	-	0.5
Hypochlorite	-	-	-	1.4	1.4	2.1	-	-	-
H_5IO_6 (Periodic acid)	-	-	-	0.01	-	-	-	-	-
Glutaraldehyde	-	-	-	-	-	-	0.035	0.035	0.025
Phenoxyethanol	-	-	-	-	-	-	-	0.3	-

(continued)

	I	II	III	IV	V	VI	VII	VIII	IX
Coconut fatty acid	-	-	-	0.9	-	-	-	-	-
Fatty acid	-	-	-	-	-	-	0.4	0.3	0.25
Citric acid	3.5	5.5	-	-	-	-	0.75	0.56	0.75
Ethanol	-	-	3.0	-	-	-	-	-	-
Dye	-	-	-	0.058	-	-	-	-	-
Perfume F	0.44	0.3	0.09	0.2	0.35	0.35	0.5 - 0.75	0.4	0.5 - 0.75
Miscellaneous and water	--100%--								

Example 27

[0215] The following is a laundry detergent composition according to the present invention:

	Examples	1	2	3	4	5	6
		(%)	(%)	(%)	(%)	(%)	(%)
First phase							
Bleach	Percarbonate	45.0	45.0	45.0	45.0	45.0	45.0
	TAED	9.7	9.7	9.7	9.7	9.7	9.7
	Metal bleach-catalyst						
Builders	Citric acid	10.0	15.0	20.0	15.0	15.0	15.0
	STPP	-	-	-	-	-	6.0
	Acrylic-Maleic copolymer	6.0	6.0	1.0	5.0	-	-
	Silicates	-	-	-	-	6.0	-
Alkalinity	Bicarbonate	15.0	15.0	10.0	15.0	15.0	15.0
	Carbonate	5.0	-	-	-	-	-
Others	Brightener	0.11	0.11	0.11	0.11	0.11	0.11
	Perfume E	0.20	0.20	0.20	0.20	0.20	0.20
	Fatty acid	-	-	-	1.0	-	-
Enzymes	Protease	0.60	0.60	0.60	0.60	0.94	0.60
	Protease - Savinase	0.34	0.34	0.34	0.34	-	0.34
	Amylase - Termamyl	1.21	1.21	1.21	1.21	1.21	1.21
Second phase							
	Protease	1.24	1.24	1.24	1.24	1.24	1.24
	Amylase	1.34	1.34	1.34	1.34	1.34	1.34
	PEG	0.09	0.09	0.09	0.09	0.09	0.09
	PEG 4000	0.33	0.33	0.33	0.33	0.33	0.33
	Citric acid	1.06	1.06	1.06	1.06	1.06	1.06
	Bicarbonate	2.87	2.87	2.87	2.87	2.87	2.87

Example 28

[0216] The following are laundry detergent compositions according to the invention:

	I	II	III	IV	V
PAP	3	-	-	5	10
DPDA	-	3	-	-	-
NAPAA	-	-	3	-	-
Carbopol ETD 2691	0.3	0.3	0.3	0.3	0.3

(continued)

	I	II	III	IV	V
Xanthan gum	0.2	0.2	0.2	0.2	0.2
AE3S	2	2	2	4 4	4
HEDP	0.1	0.1	0.1	0.1	0.1
Tinopal SOP	-	-	-	0.02	0.02
Norasol LMW 45N	-	-	-	3	3
Colouring agent	-	-	-	40 ppm	40 ppm
Perfume E	0.2	0.2	-	-	-
Perfume F	-	-	0.2	0.2	0.2
water to balance to 100%					
pH	3.8	3.8	3.8	3.8	3.8

PAP is pthaloylimido peroxy hexanoic acid

DPDA is diperoxydodecanoic acid

NAPAA is the monononylamide of monoperoxysuccinic acid

Carbopol ETD 2691 is a polyacrylate polymer available from BF Goodrich Tinopal SOP is a brightener

Norasol LMW 45N is a polyacrylate polymer

Colouring agent is Cosmenyl Blue A2R

Claims

1. A perfume composition comprising perfume ingredients which have a bleaching stability Index of at least 80% and/or an odour character of value A or B with an odour intensity of at least 6, and selected from the classes of unsaturated perfume ingredients of ester, ether, alcohol, aldehyde, ketone, nitrile, lactone, schiff-bases, terpenes and derivatives thereof, cyclic alkene, cyclic oxide, oxime, and mixtures thereof, wherein the amount of unsaturated materials represents at least 40% by weight of the perfume composition.

2. A laundry and cleaning composition comprising a bleaching system and a perfume composition, wherein the bleaching system has a bleach stability index (BSI) of at least 80% and/or an odour character of value A or B with an odour intensity of at least 6, and wherein the perfume composition comprises perfume ingredients selected from the classes of unsaturated perfume ingredients of ester, ether, alcohol, aldehyde, ketone, nitrile, lactone, schiff-bases, terpenes and derivatives thereof, cyclic alkene, cyclic oxide, oxime, and mixtures thereof.

3. A composition according to Claim 2, wherein the amount of unsaturated perfume ingredients represents an amount of greater than 20% by weight of the perfume composition.

4. A composition according to any one of Claims 1-3, wherein the amount of unsaturated perfume ingredients represents at least 50%, and most preferably of at least 70% by weight of the perfume composition.

5. A composition according to any one of Claim 1-4, wherein the perfume composition is present in an amount 0.01% to 10%, preferably from 0.05% to 5%, and more preferably from 0.1% to 3%, by weight of the laundry and cleaning composition.

6. A composition according to any one of Claims 1-5, wherein the bleaching system is a system capable of providing organic peroxyacid bleach to a laundry wash solution wherein said bleach system is selected from:

i)-a source of hydrogen peroxide in combination with an organic peroxyacid bleach precursor compound;
ii)-a preformed organic peroxyacid,

iii)-a halogen bleach component;
iv)-persulfate salts; and
v)-mixtures thereof.

7. A composition according to any one of Claims 1-6, wherein the bleaching system is a peroxyacid, preferably a preformed organic peroxyacid, more preferably is phthalimido peroxy hexanoic acid.

8. A composition according to any one of Claims 1-7, wherein the composition further comprises a detergent active material.

9. A composition according to any one of 1-8, wherein the unsaturated perfume component have a bleaching stability index of at least 80%, an odor impact and aging of value A or B and an odour intensity of at least 6, and preferably are selected from the classes of alicyclic ester, aliphatic ester, cyclic ester, aromatic ester, alicyclic ether, cyclic ether, aromatic ether, primary alcohols, tertiary alcohols, aromatic alcohols, cyclic alcohols, aliphatic aldehyde, cyclic aldehydes, aliphatic primary aldehyde, aromatic aldehydes, tertiary aldehydes, aliphatic ketones, aromatic ketones, cyclic ketones, macrocyclic ketones, aliphatic nitrile, aromatic nitrile, cyclic nitrile, 1,2-benzopyrone, Methyl 2-((-1-(2, 4-dimethyl-3-cyclohexenyl)methylidene)amino)-1-benzenecarboxylate, Methyl 2-((-2-methylpentylidene)amino)-1-benzenecarboxylate, dimethyl-2-Methylene bicyclo (3,1,1) Heptane (6,6-), para-mentha-1,4(8)-diene, and mixtures thereof.

10. A composition according to Claim 9, wherein the unsaturated perfume component which have a bleaching stability index of at least 80%, an odor impact and aging of value A or B with an odour intensity of at least 6 are selected from ethyl 2,6,6-trimethyl-1,3-cyclohexdiene-1-carboxylate, cis-beta-gamma-hexenyl acetate, 2-methylbuten-2-ol-4-acetate; glycolic acid, 2-pentyloxy:allyl ester, methyl-2-nonenoate, cis-beta-gamma-Hexenyl salicylate, 4-methyl-pentan-2-ol 2-butenoate, hexyl 2-butenoate, acetyl diisoamylene, 3-methylene-7-methyl-1-octen-7-yl acetate, methyl 2-nonenoate, citronellyl acetate, isobutyl angelate, tricyclo decenyl acetate, tricyclo decenyl propionate, 7-Acetyl, 1,2,3,4,5,6,7,8-octahydro-1,1,6,7-tetramethyl naphtalene, givescone, allyl cyclohexyloxy acetate, 4(3)-(4-Methyl-3-pentenyl)-3-cyclohexenyl-methyl acetate, 2-cyclopentyl-cyclopentyl 2-butenoate, datilat, 6-Butyl-3,6-dihydro-2,4-dimethyl-2-hydro-pyran, 3, 6-dihydro-4, 6-dimethyl-2-phenyl-2hydro-pyran, 9-(Methyloxy)tricydo [5,2,1,0$^{2.6}$]dec-3-ene, beta gamma hexenol, 3,7-dimethyl-6-octen-1-ol, cis-3-hexenol, 9-Decen-1-ol, geraniol, 2,6-dimethyl-7-octen-2-ol, linalool, dihydro myrcenol, 3,7-Dimethyl-1,6-octadien-3-ol, 4-Methyl-3-decen-5-ol, amyl vinyl carbinol, 3-Phenyl-2-propen-1-ol, 2-Methyl-4-phenyl-1-pentanol, 2-Ethyl-4-(2,2,3-trimethyl-3-cyclopenten-1-yl)-2-buten-1-ol, 4,7-Methano-1H-inden-5-ol, 3a,4,5,6,7,7a-Hexahydro-2(or 3), 4-dimethyl, dimethyl cyclohexene methanol, 5-(2,2,3-Trimethyl-3-cyclopentenyl)-3-methylpentan-2-ol, 1-Para-Menthen-4-ol, terpineol, ambrinol L20, 3,7-Dimethyl-6-octen-1-al, 2-Methl-4(2,6,6-trimethyl-1-cyclohexenyl-)2-butenal, 1 -Methyl-4-(4-methyl-pentyl)-3-cyclohexenecarbaldehyde, 2,7-Dimethyloct-5-en-4-one 50% in Iso Propyl Myristate, Hexahydro Tetramethyl Methanonaphtalenone, 4-Penten-1-one, 1-(5,5-dimethyl-1-cyclohexen-1-yl)-, 5,8-Methano-2H-1-benzopyran; 6-ethylideneoctahydro-, 2-Buten-1-one; 1-(2,6,6-trimethyl-2-cyclohexen-1-yl)-, Diethyl dimethylcyclohex-2-en-1-one, 2-Buten-1-one, 1-(2,6,6-trimethyl-1-cyclohexen-1-yl)-, 2,5,10-Trimethyl-2,5,9-cyclododecatrien-1-yl methyl ketone, Methyl cedr-8-enyl ketone, Oxacyclohexadecen-2-one, 3,7-dimethyl-2,6-octadienenitrile, 3,12-tridecadiene nitrile, iris nitrile, ozonil, teamonyl, 5-Phenyl-3-methyl-penten-2-acid-nitrile, 2-Benzyl-2-methyl-3-butenenitril, rose nitrile, 1,2-benzopyrone, Methyl 2-((-1-(2, 4-dimethyl-3-cyclohexenyl)methylidene)amino)-1-benzenecarboxylate, Methyl 2-((-2-methylpentylidene)amino)-1-benzenecarboxylate, Dimethyl-2-Methylene Bicyclo(3,1,1) Heptane (6,6-); Para-Mentha-1 ,4(8)-diene, and mixtures thereof.

11. A composition according to claim 1-10, wherein said composition is a liquid composition, preferably liquid aqueous composition, more preferably liquid aqueous suspension.

12. A method for treating fabrics which comprises the steps of contacting the surfaces with a composition as defined in any one of Claim 1-11.