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(54) **Fabric softeners containing water soluble dyes for reduced staining**

(57) The current invention relates to a fabric softener composition comprising :

- (a) from 1% to 50% by weight of a fabric softener active compound and
(b) a water soluble dye system characterized in that the dye system comprises a dye selected from the group consisting of :

1. Quinoline Yellow 70 with color index no. 47005;
2. Tartrazine XX90 with color index no. 19140;
3. Orange RGL90 with color index no. 15985;
4. Ponceau 4RC82 with color index no. 16255;
5. Blue AE85 with color index no. 42090;
6. Patent Blue V85/V50 with color index no. 42051; and
7. mixtures thereof.

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Description**Technical Field**

5 The present invention relates to the selection of certain water soluble dyes to be incorporated into liquid fabric softener compositions to reduce staining of fabrics.

Background of the Invention

10 Liquid fabric softening compositions have long been known in the art and are widely utilized by consumers during the rinse cycles of automatic laundry operations. The term "fabric softening" as used herein and as known in the art refers to a process whereby a desirably soft hand and fluffy appearance are imparted to fabrics.

Dyes are often used in consumer products to provide pleasing aesthetics. In the case of fabric care products, one wants to be able to provide the desired color aesthetics with as little dye as possible to minimize chances for staining
15 clothes. Thus, one likes to be able to formulate with as low a level of dye as possible, yet provide a pleasant color aesthetic.

In WO 94/10285 is disclosed fabric softening compositions comprising a dye system with water soluble Liquitint^R dyes. Liquitint^R dyes, available from Milliken Chemical Co., also reduce staining as disclosed in said WO 94/10285, however a disadvantage of Liquitint^R dyes is its color strength. It appears that the color strength of Liquitint^R is very low
20 and thus in order to obtain a satisfactory level of colorant in a finished fabric softener product, one need to add high amounts of said Liquitint^R dye.

In case a consumer spills the fabric softener product containing this Liquitint^R dye onto a fabric, unacceptable staining problems occur. Subsequently, the consumer had to wash the fabric several times in order to remove the stain and often it turned out not to have the desired results viz. removal of the stain.

25 Therefore a new dye system is certainly needed to meet consumer acceptance regarding this problem. A solution to this problem is found in the present invention based on the discovery that water soluble dyes Vitasyn^R, which are available from Hoechst, reduce staining via an increased ease of stain removal from fabrics. Said water soluble dyes when applied in fabric softening compositions also give less hueing than with conventional dyes.

Said Vitasyn^R dyes are known as colorants in food, however nowhere is disclosed that Vitasyn^R dyes can be used
30 in liquid fabric softener compositions leading to a reduced staining potential. In addition, it appears that the presence of Vitasyn^R dyes in the fabric softener compositions surprisingly also leads to less hueing on fabrics.

Summary of the Invention

35 The present invention relates to fabric softener compositions especially liquid fabric softener compositions, comprising a water soluble dye system. This dye system comprises dyes selected from the group consisting of :

1. Quinoline Yellow 70 with color index no. 47005;
2. Tartrazine XX90 with color index no. 19140;
- 40 3. Orange RGL90 with color index no. 15985;
4. Ponceau 4RC82 with color index no. 16255;
5. Blue AE85 with color index no. 42090;
6. Patent Blue V85/V50 with color index no. 42051;
7. Green LFS;
- 45 8. Green LFS 01; and
9. mixtures thereof.

Most preferred in a composition are the combinations of Vitasyn^R dyes Patent Blue V85 and Ponceau or Patent Blue AE85 and Ponceau.

50 Said dyes are to be mixed at a certain level and ratio viz. the dyes are present from 0.1ppm to 1000 ppm, preferably from 1ppm to 100ppm while the ratio of the present dyes ranges from 19:1 to 1:19.

Detailed description of the Invention

55 The present invention is concerned with fabric softener compositions comprising

- (a) from 1% to 50% by weight of a fabric softener active compound and
- (b) a water soluble dye system characterized in that the dye system comprises a dye selected from the group consisting of :

1. Quinoline Yellow 70 with color index no. 47005;
2. Tartrazine XX90 with color index no. 19140;
3. Orange RGL90 with color index no. 15985;
4. Ponceau 4RC82 with color index no. 16255;
5. Blue AE85 with color index no. 42090;
6. Patent Blue V85/V50 with color index no. 42051; and
7. mixtures thereof.

Preferably the dye system consists of

- a) 4 parts Patent Blue V85/V50 with color index no. 42051 and 1 part Ponceau 4RC82 with color index no. 16255 or
- b) 4 parts Blue AE85 with color index no. 42090 and 1 part Ponceau 4RC82 with color index no. 16255.

Other preferred dye systems depending on the desired color to be obtained are

1) a system consisting of

- a) Tartrazine XX90 with color index no. 19140 or
- b) Quinoline Yellow 70 with color index no. 47005.

2) a system consisting of

- a) 2 parts Patent Blue V85/V50 with color index no. 42051 and 3 parts Tartrazine XX90 with color index no. 19140 or
- b) 2 parts Patent Blue V85/V50 with color index no. 42051 and 3 parts Quinoline Yellow 70 with color index no. 47005 or
- c) 2 parts Blue AE85 with color index no. 42090 and 3 parts Tartrazine XX90 with color index no. 19140, or
- d) 2 parts Blue AE85 with color index no. 42090 and 3 parts Quinoline Yellow 70 with color index no. 47005.

3) a system consisting of

- a) 1 part Tartrazine XX90 with color index no. 19140 and 1 part Ponceau 4RC82 with color index no. 16255, or
- b) 1 part Quinoline Yellow 70 with color index no. 47005 and 1 part Ponceau 4RC82 with color index no. 16255.

The dyes according to the invention can also be mixed with other commercially available conventional dyes which are for instance Acid Red 52 with color index no. 45100, Acid Yellow 3 with color index no. 47005, Acid Blue 127 with color index no. 61135, Acid Blue 5 with color index no. 42051, Acid Blue 80 with color index no. 61585 and mixtures thereof.

Furthermore, the pH of the composition is less than about 6, preferably less than about 4 and more preferably from 1.8 to 3.5.

For example, 2 parts Patent Blue V85/V50 can be mixed with 3 parts Acid Red 52 or 2 parts Blue AE85 can be mixed with 3 parts Acid Red 52.

The Vitasyn^R dyes, above mentioned according to the invention, are highly water-soluble. So a high color intensity is possible because of the high color strength of the Vitasyn^R dyes itself. Consequently only small amounts of the respective Vitasyn^R dye is needed to obtain the desired color in the finished fabric softening product.

The dyes are water soluble and non-reactive and are therefore compatible with fragrances and preservatives and tend not to complex with other usual ingredients of the composition.

The dyes are stable in a wide pH range, especially at a lower pH in the range of 1.8 to 3.5 which is important in especially biodegradable softener compositions.

The dyes can be added to the composition at any point during the processing including into the water seat, after the addition of electrolyte (hot) or post-addition to the cooled product or mixed with any other raw material prior to the addition into the final mix.

The fabric softeners

Fabric conditioning compositions, in particular fabric softening compositions to be used in the rinse cycle of laundry washing processes, are well known.

The fabric softening materials may be selected from cationic, nonionic, amphoteric or anionic fabric softening material.

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- 1) N,N-di(tallowoyl-oxy-ethyl)-N,N-dimethyl ammonium chloride;
- 2) N,N-di(tallowoyl-oxy-ethyl)-N-methyl, N-(2-hydroxyethyl);
- 3) N,N-di(2-tallowyloxy-2-oxo-ethyl)-N,N-dimethyl ammonium chloride;

- 4) N,N-di(2-tallowyloxyethylcarbonyloxyethyl)-N,N-dimethyl ammonium chloride;
 5) N-(2-tallowyloxy-2-ethyl)-N-(2-tallowyloxy-2-oxo-ethyl)-N,N-dimethyl ammonium chloride;
 6) N,N,N-tri(tallowyl-oxy-ethyl)-N-methyl ammonium chloride;
 7) N-(2-tallowyloxy-2-oxoethyl)-N-(tallowyl-N,N-dimethyl-ammonium chloride; and
 8) 1,2-ditallowyl oxy-3-trimethylammoniopropane chloride.; and mixtures of any of the above materials.

Of these, compounds 1-7 are examples of compounds of Formula (I); compound 8 is a compound of Formula (II).

Particularly preferred is N,N-di(tallowyl-oxy-ethyl)-N,N-dimethyl ammonium chloride, where the tallow chains are at least partially unsaturated.

The level of unsaturation of the tallow chain can be measured by the Iodine Value (IV) of the corresponding fatty acid, which in the present case should preferably be in the range of from 5 to 100 with two categories of compounds being distinguished, having a IV below or above 25.

Indeed, for compounds of Formula (I) made from tallow fatty acids having a IV of from 5 to 25, preferably 15 to 20, it has been found that a cis/trans isomer weight ratio greater than about 30/70, preferably greater than about 50/50 and more preferably greater than about 70/30 provides optimal concentrability.

For compounds of Formula (I) made from tallow fatty acids having a IV of above 25, the ratio of cis to trans isomers has been found to be less critical unless very high concentrations are needed.

Other examples of suitable quaternary ammoniums of Formula (I) and (II) are obtained by, e.g. :

- replacing "tallow" in the above compounds with, for example, coco, palm, lauryl, oleyl, ricinoleyl, stearyl, palmityl, or the like, said fatty acyl chains being either fully saturated, or preferably at least partly unsaturated;
- replacing "methyl" in the above compounds with ethyl, ethoxy, propyl, propoxy, isopropyl, butyl, isobutyl or t-butyl;
- replacing "chloride" in the above compounds with bromide, methylsulfate, formate, sulfate, nitrate, and the like.

In fact, the anion is merely present as a counterion of the positively charged quaternary ammonium compounds. The nature of the counterion is not critical at all to the practice of the present invention. The scope of this invention is not considered limited to any particular anion.

By "amine precursors thereof" is meant the secondary or tertiary amines corresponding to the above quaternary ammonium compounds, said amines being substantially protonated in the present compositions due to the claimed pH values.

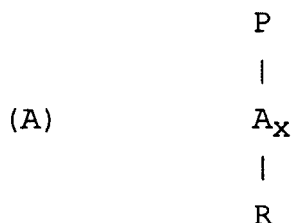
The quaternary ammonium or amine precursors compounds herein are present at levels of from about 1% to about 80% of compositions herein, depending on the composition execution which can be dilute with a preferred level of active from about 5% to about 15%, or concentrated, with a preferred level of active from about 15% to about 50%, most preferably about 15% to about 35%.

Optional ingredients

Fully formulated fabric softening compositions can contain polymers having a partial or net cationic charge.

Such polymers can be used at levels of from 0.001% to 10%, preferably 0.01% to 2% by weight of the compositions.

Such polymers having a partial cationic charge can be polyamine N-oxide containing polymers which contain units having the following structure formula (A):



wherein P is a polymerisable unit, whereto the

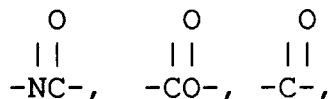


group can be attached to or wherein the



group forms part of the polymerisable unit or a combination of both.

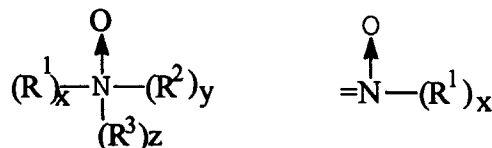
A is



-O-, -S-, -N- ; x is 0 or 1;

R are aliphatic, ethoxylated aliphatics, aromatic, heterocyclic or alicyclic groups or any combination thereof whereto the nitrogen of the N→O group can be attached or wherein the nitrogen of the N→O group is part of these groups.

The N→O group can be represented by the following general structures :



wherein R¹, R², and R³ are aliphatic groups, aromatic, heterocyclic or alicyclic groups or combinations thereof, x or/and y or/and z is 0 or 1 and wherein the nitrogen of the N→O group can be attached or wherein the nitrogen of the N→O group forms part of these groups.

The N→O group can be part of the polymerisable unit (P) or can be attached to the polymeric backbone or a combination of both.

Suitable polyamine N-oxides wherein the N→O group forms part of the polymerisable unit comprise polyamine N-oxides wherein R is selected from aliphatic, aromatic, alicyclic or heterocyclic groups.

One class of said polyamine N-oxides comprises the group of polyamine N-oxides wherein the nitrogen of the N→O group forms part of the R-group. Preferred polyamine N-oxides are those wherein R is a heterocyclic group such as pyridine, pyrrole, imidazole, pyrrolidine, piperidine, quinoline, acridine and derivatives thereof.

Another class of said polyamine N-oxides comprises the group of polyamine N-oxides wherein the nitrogen of the N→O group is attached to the R-group.

Other suitable polyamine N-oxides are the polyamine oxides whereto the N→O group is attached to the polymerisable unit.

Preferred class of these polyamine N-oxides are the polyamine N-oxides having the general formula (A) wherein R is an aromatic, heterocyclic or alicyclic groups wherein the nitrogen of the N→O functional group is part of said R group.

Examples of these classes are polyamine oxides wherein R is a heterocyclic compound such as pyridine, pyrrole, imidazole and derivatives thereof.

Another preferred class of polyamine N-oxides are the polyamine oxides having the general formula (A) wherein R are aromatic, heterocyclic or alicyclic groups wherein the nitrogen of the N→O functional group is attached to said R groups.

Examples of these classes are polyamine oxides wherein R groups can be aromatic such as phenyl.

Any polymer backbone can be used as long as the amine oxide polymer formed is water-soluble and has dye transfer inhibiting properties. Examples of suitable polymeric backbones are polyvinyls, polyalkylenes, polyesters, polyethers, polyamide, polyimides, polyacrylates and mixtures thereof.

The amine N-oxide polymers useful herein typically have a ratio of amine to the amine N-oxide of about 10:1 to about 1:1000000. However the amount of amine oxide groups present in the polyamine N-oxide containing polymer can be varied by appropriate copolymerization or by appropriate degree of N-oxidation. Preferably, the ratio of amine to amine N-oxide is from about 2:3 to about 1:1000000. More preferably from about 1:4 to about 1:1000000, most preferably from about 1:7 to about 1:1000000. The polymers of the present invention actually encompass random or block copolymers where one monomer type is an amine N-oxide and the other monomer type is either an amine N-oxide or not. The amine oxide unit of the polyamine N-oxides has a PKa < 10, preferably PKa < 7, more preferred PKa < 6.

The polyamine N-oxide containing polymer can be obtained in almost any degree of polymerisation. The degree of

polymerisation is not critical provided the material has the desired water-solubility and dye-suspending power. Typically, the average molecular weight of the polyamine N-oxide containing polymer is within the range of about 500 to about 1000,000; preferably from about 1,000 to about 50,000, more preferably from about 2,000 to about 30,000, most preferably from about 3,000 to about 20,000.

5 Such polymers having a net cationic charge include polyvinylpyrrolidone (PVP) as well as copolymers of N-vinylimidazole N-vinyl pyrrolidone, having an average molecular weight range in the range about 5,000 to about 100,000, preferably about 5,000 to about 50,000; said copolymers having a molar ratio of N-vinylimidazole to N-vinylpyrrolidone from about 1 to about 0.2, preferably from about 0.8 to about 0.3.

10 Other optional ingredients include :

Additional softening agents : which are nonionic fabric softener materials. Typically, such nonionic fabric softener materials have a HLB of from about 2 to about 9, more typically from about 3 to about 7. Such nonionic fabric softener materials tend to be readily dispersed either by themselves, or when combined with other materials such as single-long-chain alkyl cationic surfactant described in detail hereinafter. Dispersibility can be improved by using more single-long-chain alkyl cationic surfactant, mixture with other materials as set forth hereinafter, use of hotter water, and/or more agitation. In general, the materials selected should be relatively crystalline, higher melting, (e.g. >40°C) and relatively water-insoluble.

20 The level of optional nonionic softener in the compositions herein is typically from about 0.1% to about 10%, preferably from about 1% to about 5%.

Preferred nonionic softeners are fatty acid partial esters of polyhydric alcohols, or anhydrides thereof, wherein the alcohol, or anhydride, contains from 2 to 18, preferably from 2 to 8, carbon atoms, and each fatty acid moiety contains from 12 to 30, preferably from 16 to 20, carbon atoms. Typically, such softeners contain from one to 3, preferably 2 fatty acid groups per molecule.

25 The polyhydric alcohol portion of the ester can be ethylene glycol, glycerol, poly (e.g., di-, tri-, tetra, penta-, and/or hexa-) glycerol, xylitol, sucrose, erythritol, pentaerythritol, sorbitol or sorbitan. Sorbitan esters and polyglycerol monostearate are particularly preferred.

30 The fatty acid portion of the ester is normally derived from fatty acids having from 12 to 30, preferably from 16 to 20, carbon atoms, typical examples of said fatty acids being lauric acid, myristic acid, palmitic acid, stearic acid and behenic acid.

Highly preferred optional nonionic softening agents for use in the present invention are the sorbitan esters, which are esterified dehydration products of sorbitol, and the glycerol esters.

Commercial sorbitan monostearate is a suitable material. Mixtures of sorbitan stearate and sorbitan palmitate having stearate/palmitate weight ratios varying between about 10:1 and about 1:10, and 1,5-sorbitan esters are also useful.

35 Glycerol and polyglycerol esters, especially glycerol, diglycerol, triglycerol, and polyglycerol mono- and/or di-esters, preferably mono-, are preferred herein (e.g. polyglycerol monostearate with a trade name of Radiasurf 7248).

Useful glycerol and polyglycerol esters include mono- esters with stearic, oleic, palmitic, lauric, isostearic, myristic, and/or behenic acids and the diesters of stearic, oleic, palmitic, lauric, isostearic, behenic, and/or myristic acids. It is understood that the typical mono- ester contains some di- and tri-ester, etc.

40 The "glycerol esters" also include the polyglycerol, e.g., diglycerol through octaglycerol esters. The polyglycerol polyols are formed by condensing glycerin or epichlorohydrin together to link the glycerol moieties via ether linkages. The mono- and/or diesters of the polyglycerol polyols are preferred, the fatty acyl groups typically being those described hereinbefore for the sorbitan and glycerol esters.

45 Surfactant/Concentration Aids

Although as stated before, relatively concentrated compositions of the unsaturated material of Formula (I) and (II) above can be prepared that are stable without the addition of concentration aids, the concentrated compositions of the present invention may require organic and/or inorganic concentration aids to go to even higher concentrations and/or to meet higher stability standards depending on the other ingredients.

50 Surfactant concentration aids are typically selected from the group consisting of single long chain alkyl cationic surfactants; nonionic surfactants; amine oxides; fatty acids; or mixtures thereof, typically used at a level of from 0 to about 15% of the composition.

55 Such mono-long-chain-alkyl cationic surfactants useful in the present invention are, preferably, quaternary ammonium salts of the general formula :

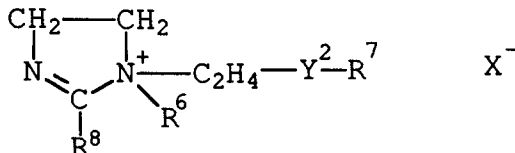


wherein the R^2 group is C_{10} - C_{22} hydrocarbon group, preferably C_{12} - C_{18} alkyl group of the corresponding ester linkage

interrupted group with a short alkylene (C₁-C₄) group between the ester linkage and the N, and having a similar hydrocarbon group, e.g., a fatty acid ester of choline, preferably C₁₂-C₁₄ (coco) choline ester and/or C₁₆-C₁₈ tallow choline ester at from about 0.1% to about 20% by weight of the softener active. Each R is a C₁-C₄ alkyl or substituted (e.g., hydroxy) alkyl, or hydrogen, preferably methyl, and the counterion X⁻ is a softener compatible anion, for example, chloride, bromide, methyl sulfate, etc.

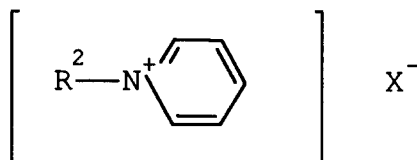
Other cationic materials with ring structures such as alkyl imidazoline, imidazolinium, pyridine, and pyridinium salts having a single C₁₂-C₃₀ alkyl chain can also be used. Very low pH is required to stabilize, e.g., imidazoline ring structures.

Some alkyl imidazolinium salts and their imidazoline precursors useful in the present invention have the general formula :



wherein Y² is -C(O)-O-, -O-(O)C-, -C(O)-N(R⁵)-, or -N(R⁵)-C(O)- in which R⁵ is hydrogen or a C₁-C₄ alkyl radical; R⁶ is a C₁-C₄ alkyl radical or H (for imidazoline precursors); R⁷ and R⁸ are each independently selected from R and R² as defined hereinbefore for the single-long-chain cationic surfactant with only one being R².

Some alkyl pyridinium salts useful in the present invention have the general formula :

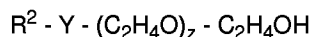


wherein R² and X⁻ are as defined above. A typical material of this type is cetyl pyridinium chloride.

Nonionic Surfactant (Alkoxylated Materials)

Suitable nonionic surfactants for use herein include addition products of ethylene oxide and, optionally, propylene oxide, with fatty alcohols, fatty acids, fatty amines, etc.

Suitable compounds are substantially water-soluble surfactants of the general formula :



wherein R² is selected from the group consisting of primary, secondary and branched chain alkyl and/or acyl hydrocarbyl groups; primary, secondary and branched chain alkenyl hydrocarbyl groups; and primary, secondary and branched chain alkyl- and alkenyl-substituted phenolic hydrocarbyl groups; said hydrocarbyl groups having a hydrocarbyl chain length of from 8 to 20, preferably from 10 to 18 carbon atoms.

Y is typically -O-, -C(O)O-, -C(O)N(R)-, or -C(O)N(R)R-, in which R² and R, when present, have the meanings given hereinbefore, and/or R can be hydrogen, and z is at least 8, preferably at least 10-11.

The nonionic surfactants herein are characterized by an HLB (hydrophilic-lipophilic balance) of from 7 to 20, preferably from 8 to 15.

Examples of particularly suitable nonionic surfactants include

Straight-Chain, Primary Alcohol Alkoxylates such as tallow alcohol-EO(11), tallow alcohol-EO(18), and tallow alcohol-EO(25);

Straight-Chain, Secondary Alcohol Alkoxylates such as 2-C₁₆EO(11); 2-C₂₀EO(11); and 2-C₁₆EO(14);

Alkyl Phenol Alkoxylates, such as p-tridecylphenol EO(11) and p-pentadecylphenol EO(18), as well as

Olefinic Alkoxylates, and Branched Chain Alkoxylates such as branched chain primary and secondary alcohols which are available from the well-known "OXO" process.

Amine Oxides

Suitable amine oxides include those with one alkyl or hydroxyalkyl moiety of 8 to 28 carbon atoms, preferably from 8 to 16 carbon atoms, and two alkyl moieties selected from the group consisting of alkyl groups and hydroxyalkyl groups with 1 to 3 carbon atoms.

Examples include dimethyloctylamine oxide, diethyldecylamine oxide, bis-(2-hydroxyethyl)dodecylamine oxide, dimethyldodecyl-amine oxide, dipropyldodecylamine oxide, methylethylhexadecylamine oxide, dimethyl-2-hydroxy-octadecylamine oxide, and coconut fatty alkyl dimethylamine oxide.

Fatty Acids

Suitable fatty acids include those containing from 12 to 25, preferably from 16 to 20 total carbon atoms, with the fatty moiety containing from 10 to 22, preferably from 10 to 14 (mid cut), carbon atoms. The shorter moiety contains from 1 to 4, preferably from 1 to 2 carbon atoms.

Electrolyte Concentration Aids

Inorganic viscosity control agents which can also act like or augment the effect of the surfactant concentration aids, include water-soluble, ionizable salts which can also optionally be incorporated into the compositions of the present invention. A wide variety of ionizable salts can be used. Examples of suitable salts are the halides of the Group IA and IIA metals of the Periodic Table of the Elements, e.g., calcium chloride, magnesium chloride, sodium chloride, potassium bromide, and lithium chloride. The ionizable salts are particularly useful during the process of mixing the ingredients to make the compositions herein, and later to obtain the desired viscosity. The amount of ionizable salts used depends on the amount of active ingredients used in the compositions and can be adjusted according to the desires of the formulator. Typical levels of salts used to control the composition viscosity are from about 20 to about 20,000 parts per million (ppm), preferably from about 20 to about 11,000 ppm, by weight of the composition.

Alkylene polyammonium salts can be incorporated into the composition to give viscosity control in addition to or in place of the water-soluble, ionizable salts above. In addition, these agents can act as scavengers, forming ion pairs with anionic detergent carried over from the main wash, in the rinse, and on the fabrics, and may improve softness performance. These agents may stabilize the viscosity over a broader range of temperature, especially at low temperatures, compared to the inorganic electrolytes.

Specific examples of alkylene polyammonium salts include L-lysine monohydrochloride and 1,5-diammonium 2-methyl pentane dihydrochloride.

Another optional ingredient is a liquid carrier. The liquid carrier employed in the instant compositions is preferably at least primarily water due to its low cost relative availability, safety, and environmental compatibility. The level of water in the liquid carrier is preferably at least about 50%, most preferably at least about 60%, by weight of the carrier. Mixtures of water and low molecular weight, e.g., <about 200, organic solvent, e.g., lower alcohol such as ethanol, propanol, isopropanol or butanol are useful as the carrier liquid. Low molecular weight alcohols include monohydric, dihydric (glycol, etc.) trihydric (glycerol, etc.), and higher polyhydric (polyols) alcohols.

Still other optional ingredients are stabilizers, such as well known antioxidants and reductive agents, Soil Release Polymers, thickeners, emulsifiers, bacteriocides, colorants, perfumes, preservatives, optical brighteners, anti ionisation agents, antifoam agents, enzymes and the like.

The invention will be further illustrated by means of the following examples.

EXAMPLES

Example I

The following liquid fabric softening compositions with the respective Vitasyn^R dyes were prepared and tested for stain removal and hueing.

	1	2	3
DEEDMAC	20	18	18
Fatty acid	-	2	2
Hydrochloric acid	0.02	0.02	0.02
Silicone emulsion	0.01	0.01	0.01
Soil release polymer	0.2	0.2	0.2
Polyethyleneglycol	0.6	0.6	0.6
Calcium chloride	0.013	0.013	0.013
Vitasyn Blue V85	0.0012	0.0012	0.0008
Vitasyn Red 4RC	0.0003	0.0003	-
Vitasyn Yellow XX90	-	-	0.0012
Perfume	1.0	1.0	1.0
Balance		Up to 100%	

Example II

Staining test

Stains with fabric softening product were made on dry and wet fabrics as well. The fabric softening product contains either commercial available current used dyes or Vitasyn^R dyes according to the invention. Of the fabrics replicas were made and delivered into four legs viz.

- untreated;
- cold rinse (in water only);
- washed with detergent composition at 40°C;
- washed with detergent composition at 60°C.

The results are shown in the following table :

Staining grades after different removal treatments			
		Reference blue dye	Vitasyn Blue
5	Wet fabric (muslin cotton)	As is	4.5
		After a rinse in cold water	3
		after a 40°C wash	3.5
		after a 60°C wash	0
10	Dry fabric (muslin cotton)	As is	5
		After a rinse in cold water	2
		after a 40°C wash	3.5
		after a 60°C wash	2
15	Wet fabric (polycotton)	As is	5
		After a rinse in cold water	0.5
		after a 40°C wash	1.5
		after a 60°C wash	0
20	Dry fabric (polycotton)	As is	5
		After a rinse in cold water	1
		after a 40°C wash	2
		after a 60°C wash	0

(0 = No stain, 5 = very intense stain)

Vitasyn blue dye delivers a significant improvement in terms of staining. Stains with Vitasyn Blue are fully removed at 40°C or at 60°C wash, as opposed to the current (reference) blue dye.

Example III

Hueing test

White swatches were cumulative washed (1-20 cycles) with detergent composition and fabric softener composition accordingly with either reference Blue dye or Vitasyn Blue dye. The results obtained are shown in the following table :

Hueing grading (PSU) vs. current blue dye		
	Reference Blue	Vitasyn Blue
1 cycle	-1.3	-0.3
5 cycles	-0.8	+0.5
10 cycles	+1.3	+1.8
15cycles	-0.4	+0.2
20 cycles	+1.1s	+1.4s
Average grade	-0.1	+0.8

The above shows that Vitasyn blue dye has a directionally better hueing profile than current reference blue dye (the

higher the number, the less hueing).

Claims

- 5 1. A fabric softener composition comprising :
 - (a) from 1% to 50% by weight of a fabric softener active compound and
 - (b) a water soluble dye system characterized in that the dye system comprises a dye selected from the group consisting of :
 - 10 1. Quinoline Yellow 70 with color index no. 47005;
 2. Tartrazine XX90 with color index no. 19140;
 3. Orange RGL90 with color index no. 15985;
 4. Ponceau 4RC82 with color index no. 16255;
 - 15 5. Blue AE85 with color index no. 42090;
 6. Patent Blue V85/V50 with color index no. 42051; and
 7. mixtures thereof.
- 20 2. A fabric softener composition according to claim 1 wherein the dyes are present from 0.1ppm to 1000 ppm, preferably from 1ppm to 100ppm.
3. A fabric softener composition according to claim 1 or 2 wherein the ratio of the dyes present are from 19:1 to 1:19.
- 25 4. A fabric softener composition according to claim 1 wherein the dye system consists of
 - a) 4 parts Patent Blue V85/V50 with color index no. 42051 and 1 part Ponceau 4RC82 with color index no. 16255 or
 - b) 4 parts Blue AE85 with color index no. 42090 and 1 part Ponceau 4RC82 with color index no. 16255.
- 30 5. A fabric softener composition according to claim 1 wherein the dye system consists of
 - a) Tartrazine XX90 with color index no. 19140 or
 - b) Quinoline Yellow 70 with color index no. 47005.
- 35 6. A fabric softener composition according to claim 1 wherein the dye system consists of
 - a) 2 parts Patent Blue V85/V50 with color index no. 42051 and 3 parts Tartrazine XX90 with color index no. 19140 or
 - b) 2 parts Patent Blue V85/V50 with color index no. 42051 and 3 parts Quinoline Yellow 70 with color index no. 47005 or
 - 40 c) 2 parts Blue AE85 with color index no. 42090 and 3 parts Tartrazine XX90 with color index no. 19140, or
 - d) 2 parts Blue AE85 with color index no. 42090 and 3 parts Quinoline Yellow 70 with color index no. 47005.
- 45 7. A fabric softener composition according to claim 1 wherein the dye system consists of
 - a) 1 part Tartrazine XX90 with color index no. 19140 and 1 part Ponceau 4RC82 with color index no. 16255, or
 - b) 1 part Quinoline Yellow 70 with color index no. 47005 and 1 part Ponceau 4RC82 with color index no. 16255.
- 50 8. A fabric softener composition according to claim 1 wherein the dye is mixed with a conventional dye selected from the group consisting of :
 1. Acid Red 52 with color index no. 45100;
 2. Acid Yellow 3 with color index no. 47005;
 3. Acid Blue 127 with color index no. 61135;
 - 55 4. Acid Blue 5 with color index no. 42051;
 5. Acid Blue 80 with color index no. 61585; and
 6. mixtures thereof.
9. A fabric softening composition according to claim 8 wherein the dye system consists of :

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a) 2 parts Patent Blue V85/V50 with color index no. 42051 and 3 parts Acid Red 52 with color index no. 45100,
or

b) 2 parts Blue AE85 with color index no. 42090 and 3 parts Acid Red 52 with color index no. 45100.

- 5 **10.** A fabric softener composition according to any of the preceding claims wherein the pH of the composition is from 1.8 to 6, preferably from 1.8 to 3.5.

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European Patent
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EUROPEAN SEARCH REPORT

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	GB-A-2 168 717 (COLGATE PALMOLIVE CO) * page 4; example 1 * ---	1	C11D3/40 C11D3/00
A	EP-A-0 255 978 (UNILEVER NV ET AL.) * page 3; example 8 * ---	1	
A	EP-A-0 635 569 (UNILEVER NV ET AL.) *Abstract* * page 4, line 42 * ---	1	
D,A	WO-A-94 10285 (PROCTER & GAMBLE CO.) * the whole document * ---	1	
A	GB-A-2 007 096 (EXTERMA-GERM PRODUCTS LTD) * abstract * * page 2, last paragraph * -----	1	
The present search report has been drawn up for all claims			
Place of search		Date of completion of the search	Examiner
BERLIN		18 January 1996	Pelli Wablat, B
CATEGORY OF CITED DOCUMENTS X : particularly relevant if taken alone Y : particularly relevant if combined with another document of the same category A : technological background O : non-written disclosure P : intermediate document T : theory or principle underlying the invention E : earlier patent document, but published on, or after the filing date D : document cited in the application L : document cited for other reasons & : member of the same patent family, corresponding document			

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