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(54) **TEXTILE BENEFIT COMPOSITIONS**

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(57) **ABSTRACT**

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The present invention relates to textile benefit compositions comprising a cellulosic based polymer component; a material selected from the group consisting of a dispersible polyolefin, a chlorine inhibitor, a dye fixative and mixtures thereof; a cross-linking agent; a carrier and an optional wetting agent or, alternatively, a chlorine inhibitor; a material selected from the group consisting of a dispersible polyolefin, a cellulosic based polymer component, a dye fixative and mixtures thereof; a cross-linking agent; a carrier and an optional wetting agent.

Related U.S. Application Data

(60) Provisional application No. 60/568,338, filed on May 5, 2004.

The present invention also relates to processes for making and using the aforementioned compositions and textiles treated with such compositions.

TEXTILE BENEFIT COMPOSITIONS

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This application claims priority under 35 U.S.C. § 119(e) to U.S. Provisional Application Ser. No. 60/568,338 filed May 5, 2004.

FIELD OF INVENTION

[0002] This invention relates to textile benefit compositions, and processes for making and using such compositions.

BACKGROUND OF THE INVENTION

[0003] Due to use and cleaning, articles that comprise fibers, for example, garments and linens fade, wear and/or shrink. In order to reduce such damage, certain benefit agents have been introduced into laundry compositions. Unfortunately the effectiveness of such compositions may be fleeting and/or limited for one or more of the following reasons: certain benefit agents are incompatible with cleaning materials found in such compositions, the level of benefit agent in such compositions may be limited due to the laundering process and the benefit that is imparted by the such compositions is not durable.

[0004] Accordingly, there is a need for textile benefit compositions that impart enhanced and/or durable anti-fade, wear and shrinkage properties to textile products.

SUMMARY OF THE INVENTION

[0005] A textile benefit composition comprising a cellulosic based polymer component; a material selected from the group consisting of a dispersible polyolefin, a chlorine inhibitor, a dye fixative and mixtures thereof; a cross-linking agent; a carrier and an optional wetting agent or, alternatively, a chlorine inhibitor; a material selected from the group consisting of a dispersible polyolefin, a cellulosic based polymer component, a dye fixative and mixtures thereof; a cross-linking agent; a carrier and an optional wetting agent.

[0006] The present invention also relates to processes for making and using the aforementioned compositions and textiles treated with such compositions.

DETAILED DESCRIPTION OF THE INVENTION

[0007] Definitions

[0008] As used herein, the term "textile products" includes, unless otherwise indicated, fibers, yarns, fabrics and/or garments or articles comprising same.

[0009] As used herein, the articles a and an when used in a claim, are understood to mean one or more of what is claimed or described.

[0010] Unless otherwise noted, all component or composition levels are in reference to the active level of that component or composition, and are exclusive of impurities, for example, residual solvents or by-products, which may be present in commercially available sources.

[0011] All percentages and ratios are calculated by weight unless otherwise indicated. All percentages and ratios are calculated based on the total composition unless otherwise indicated.

[0012] It should be understood that every maximum numerical limitation given throughout this specification includes every lower numerical limitation, as if such lower numerical limitations were expressly written herein. Every minimum numerical limitation given throughout this specification will include every higher numerical limitation, as if such higher numerical limitations were expressly written herein. Every numerical range given throughout this specification will include every narrower numerical range that falls within such broader numerical range, as if such narrower numerical ranges were all expressly written herein.

[0013] All documents cited are, in relevant part, incorporated herein by reference; the citation of any document is not to be construed as an admission that it is prior art with respect to the present invention.

[0014] Textile Benefit Compositions

[0015] Applicants' textile benefit compositions comprise a cellulosic based polymer component; a material selected from the group consisting of a dispersible polyolefin, a chlorine inhibitor, a dye fixative and mixtures thereof; a cross-linking agent; a carrier and an optional wetting agent or, alternatively, a chlorine inhibitor; a material selected from the group consisting of a dispersible polyolefin, a cellulosic based polymer component, a dye fixative and mixtures thereof; a cross-linking agent; a carrier and an optional wetting agent.

[0016] In one aspect of Applicants' invention, Applicants' textile benefit composition has a pH of from about 2 to about 11, from about 3 to about 9, or alternatively from about 3 to about 5 and comprises:

[0017] a.) from about 0.005% to about 10%, from about 0.01% to about 5% or alternatively from about 0.05% to about 2% by weight of a cellulosic based polymer component;

[0018] b.) from about 0.005% to about 20%, from about 0.01% to about 10% or alternatively from about 0.05% to about 5% of a material selected from the group consisting of a dispersible polyolefin, a chlorine inhibitor, a dye fixative and mixtures thereof;

[0019] c.) from about 0.01% to about 15%, from about 0.01% to about 12% or alternatively from about 0.1% to about 10% of a cross-linking agent; and

[0020] d.) an optional wetting agent

[0021] the balance of said composition being a carrier.

[0022] In one aspect of Applicants' invention, Applicants' textile benefit composition has a pH of from about 2 to about 11, from about 3 to about 9, or alternatively from about 3 to about 5 and comprises:

[0023] a.) from about 0.01% to about 10%, from about 0.05% to about 5% or alternatively from about 0.1% to about 3% by weight of a chlorine inhibitor;

[0024] b.) from about 0.005% to about 20%, from about 0.01% to about 10% or alternatively from about 0.05% to about 5% of a material selected from the group consisting of a dispersible polyolefin, a cellulosic based polymer component, a dye fixative and mixtures thereof;

[0025] c.) from about 0.01% to about 15%, from about 0.01% to about 12% or alternatively from about 0.1% to about 10% of a cross-linking agent; and

[0026] d.) an optional wetting agent

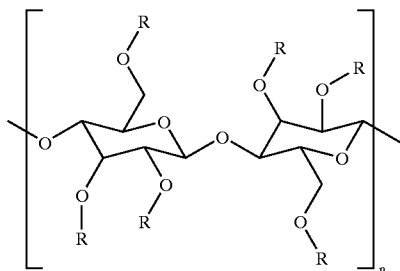
[0027] the balance of said composition being a carrier.

[0028] In one aspect of Applicants' invention, such textile benefit compositions are capable of imparting a durable benefit to textile products that are treated with said composition.

[0029] In one aspect of Applicants' invention, such textile benefit compositions do not contain an optional wetting agent.

[0030] In one aspect of Applicants' invention, such textile benefit compositions do not contain one or more of the following adjuncts materials: bleach activators, surfactants, builders, chelating agents, dye transfer inhibiting agents, dispersants, enzymes, and enzyme stabilizers, catalytic metal complexes, polymeric dispersing agents, clay and soil removal/anti-redeposition agents, brighteners, suds suppressors, dyes, perfumes, structure elasticizing agents, fabric softeners, carriers, hydrotropes, processing aids and/or pigments.

[0031] Useful cellulosic based polymer components include, those components that comprise a hydrophobically modified carboxymethyl cellulose polymer having a weight average molecular weight of from about 10,000 Daltons to about 2,000,000 Daltons, from about 30,000 Daltons to about 1,500,000 Daltons or alternatively from about 100,000 Daltons to about 1,000,000 Daltons. Said hydrophobically modified carboxymethyl cellulose polymer comprising repeat units having the following formula:



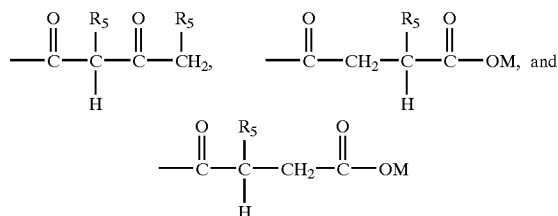
[0032] wherein:

[0033] a.) n is a sufficiently large integer to result in said hydrophobically modified carboxymethyl cellulose polymer having a weight average molecular weight of from about 10,000 Daltons to about 2,000,000 Daltons, from about 30,000 Daltons to about 1,500,000 Daltons or alternatively from about 100,000 Daltons to about 1,000,000 Daltons;

[0034] b.) each R is independently selected from the group consisting of R_H , R_C , and H ;

[0035] wherein:

[0036] (i) each R_H is independently selected from the group consisting of C_5 - C_{20} alkyl, C_5 - C_7 cycloalkyl, C_7 - C_{20} alkylaryl, C_7 - C_{20} arylalkyl, substituted alkyl, hydroxyalkyl, C_1 - C_{20} alkoxy-2-hydroxyalkyl, C_7 - C_{20} alkylaryloxy-2-hydroxyalkyl, $(R_4)_2N$ -alkyl, $(R_4)_2N$ -2-hydroxyalkyl, C_6 - C_{12} aryloxy-2-hydroxyalkyl,



[0037] each R_4 is independently selected from the group consisting of H , C_1 - C_{20} alkyl, C_5 - C_7 cycloalkyl, C_7 - C_{20} alkylaryl, C_7 - C_{20} arylalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, piperidinoalkyl, morpholinoalkyl, cycloalkylaminoalkyl and hydroxyalkyl;

[0038] each R_5 is independently selected from the group consisting of H , C_1 - C_{20} alkyl, C_5 - C_7 cycloalkyl, C_7 - C_{20} alkylaryl, C_7 - C_{20} arylalkyl, substituted alkyl, hydroxyalkyl, $(R_6)_2N$ -alkyl, and $(R_6)_3N$ -alkyl;

[0039] each R_6 is independently selected from the group consisting of H , C_1 - C_{20} alkyl, C_5 - C_7 cycloalkyl, C_7 - C_{20} alkylaryl, C_7 - C_{20} arylalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, piperidinoalkyl, morpholinoalkyl, cycloalkylaminoalkyl and hydroxyalkyl;

[0040] wherein two R_4 or R_6 moieties on the same nitrogen can together form a ring structure selected from the group consisting of piperidine and morpholine;

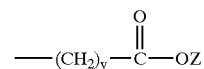
[0041] M is a suitable cation selected from the group consisting of Na , K , $\frac{1}{2} Ca$, and $\frac{1}{2} Mg$; and

[0042] provided that:

[0043] if any R_H bears a positive charge, it is balanced by a suitable anion; and

[0044] the Degree of Substitution for R_H is between about 0.0001 and 0.1;

[0045] (ii) each R_C is



[0046] wherein each Z is independently selected from the group consisting of M, R₂ and R_H; wherein:

[0047] each M is as defined above;

[0048] each R_H is as defined above;

[0049] each R₂ is independently selected from the group consisting of H and C₁-C₄ alkyl;

[0050] each y is from about 1 to about 5; and

[0051] provided that:

[0052] the Degree of Substitution for group R_C wherein Z is H or M is between about 0.1 and 2.0.

[0053] Examples of useful classes of hydrophobically modified carboxymethyl cellulose polymers include ether modified carboxymethyl cellulose polymers, ester modified carboxymethyl cellulose polymers and mixtures thereof. Useful hydrophobically modified carboxymethyl cellulose polymers may be obtained from Noviant Oy of Äänekoski, Finland.

[0054] Useful dispersible polyolefins include high or low density polyethylene waxes having melting points of from about 30° C. to about 180° C., from about 45° C. to about 160° C. or alternatively from about 60° C. to about 150° C. Such waxes may be oxidized polyethylene waxes. Such waxes may be obtained from Honeywell Corp. of Morristown New Jersey U.S.A. and are typically supplied as polyethylene wax emulsions comprising nonionic surfactants, anionic surfactants or mixtures. Specific examples of useful polyethylene wax emulsions include Michem Emulsion 39235, Michem Emulsion 68725 and mixtures thereof. Such emulsions may be obtained from Michelman Inc. Cincinnati, Ohio USA.

[0055] Useful carriers may comprise water. For, example, a useful carrier is water.

[0056] Useful chlorine inhibitors include those chlorine inhibitors that comprise a polyamine component. Useful polyamine components include those polyamine components that comprise polyamines comprising primary, secondary and tertiary amines. Such polyamines may be ethoxylated. Specific examples of useful polyamine components include those polyamine components that comprise a material selected from the group consisting of an ethoxylated tetraethylene pentamine, a polyethyleneimine, an ethoxylated polyethyleneimine, a polyvinylpyrrolidone, a polyvinylamine, a polylysine; a bis-hexamethylenediamine and mixtures thereof. Useful chlorine inhibitors may be obtained from BASF Corp., of Ludwingshafen, Germany.

[0057] Useful dye fixatives include cationic hydroxyethyl cellulose supplied by Dow Chemicals of Piscataway N.J., USA.

[0058] Useful cross-linking agents include those cross-linking agents that comprise a material selected from the group consisting of methylol and alkoxymethyl derivatives of urea and of ethylene and propylene urea and multifunctional carboxylic acids. Non-limiting examples of methylol and alkoxymethyl derivatives of urea and of ethylene and propylene urea include dimethyloldihydroxyethyleneurea. Non-limiting examples of multifunctional carboxylic acids include butanetetracarboxylic acid and polymaleic acid.

Useful cross-linking agents may be obtained from Noveon Inc, of Brecksville, Ohio U.S.A.

[0059] While not required, the textile benefit compositions disclosed herein may comprise a wetting agent. Useful wetting agents include nonionic and anionic surfactants. Useful wetting agents may be obtained from BASF Corp., of Ludwingshafen, Germany.

[0060] Applicants' recognized that the barriers to reducing textile problems such as fading, pilling, rough hand, shrinking, and abrasion could be overcome as the source of such barriers was the laundry application process which limited formula and processing flexibility. In addition, Applicants recognized that such problems could only be reduced to desired levels by providing a combination of durable benefits and that the application of such benefits required that such benefits be obtained in a processing stage such as the textile mill processing stage. While not being bound by theory, it is believed that the when Applicants' textile treatment compositions are applied to textile products, the benefit agents contained in such compositions become chemically bound to said textile products, thus resulting in superior textile products that have one or more of the following enhanced and/or durable benefits: anti-fading, anti-pilling, improved hand, anti-shrinking, and increased abrasion resistance.

[0061] Adjunct Materials

[0062] While certain embodiments of Applicants textile benefit compositions do not contain one or more of the adjunct materials listed herein as such adjuncts are not essential for the purposes of the present invention, other embodiments may contain one or more adjuncts illustrated hereinafter. Such adjuncts may be incorporated in the textile benefit compositions disclosed herein, for example to assist or enhance cleaning performance, or to modify the aesthetics of the such compositions as is the case with perfumes, colorants, dyes or the like. The precise nature of these additional components, and levels of incorporation thereof, will depend on the physical form of the textile benefit composition and the nature of the operation for which it is to be used and applied. Useful adjunct materials may include, but are not limited to, bleach activators, surfactants, builders, chelating agents, dye transfer inhibiting agents, dispersants, enzymes, and enzyme stabilizers, catalytic metal complexes, polymeric dispersing agents, clay and soil removal/anti-redeposition agents, brighteners, suds suppressors, dyes, perfumes, structure elasticizing agents, fabric softeners, carriers, hydrotropes, processing aids and/or pigments.

[0063] Processes of Making Textile Benefit Compositions

[0064] The skilled artisan can produce the textile benefit compositions of the present invention by following the teaching contained herein and in the examples as such compositions may be made by combining the requisite materials.

[0065] Commercial quantities of such textile benefit compositions can be made using a variety of reaction vessels and processes including batch, semi-batch and continuous processes. Such equipment may be obtained from a variety of sources such as Lodige GmbH (Paderborn, Germany), Littleford Day, Inc. (Florence, Kentucky, U.S.A.), Forberg A

S (Larvik, Norway), Glatt Ingenieurtechnik GmbH (Weimar, Germany), Niro (Soeborg, Denmark), Hosokawa Bepex (Minneapolis, Minn., USA).

[0066] Method of Use

[0067] A textile product may be treated with any of Applicants' textile benefit compositions or mixtures thereof by:

[0068] a.) contacting at least a portion of a textile product with any of Applicants' textile benefit compositions or mixtures thereof;

[0069] b.) removing a sufficient amount of said composition from said textile product to achieve a wet pick-up of from about 10% to about 200%, from about 15% to about 150% or alternatively from about 20% to about 120%; and

[0070] c.) drying and curing at least the portion of said textile product that was in contact with said composition.

[0071] Typically said textile product is treated prior to said being used by end user. Typically said treatment occurs in a textile mill. Typically said contacting step comprises an operation selected from saturating, spraying, padding, exhaustion and combinations thereof. When said treatment's contacting step comprises padding, a sufficient amount of said textile treatment composition is typically removed from said textile product to achieve a wet pick-up of from about 30% to about 200%, from about 50% to about 150% or alternatively from about 60% to about 120%. When said treatment's contacting step comprises spraying, a sufficient amount of said textile treatment composition is typically removed from said textile product to achieve a wet pick-up of from about 10% to about 150%, from about 15% to about 100% or alternatively from about 20% to about 80%.

[0072] Useful equipment for practicing the method disclosed herein includes standard textile processing equipment including but not limited to batch, semi-continuous and continuous processing equipment and combinations thereof.

[0073] Durable Textile Products

[0074] Textile products having enhanced and/or durable benefits may be made by treating said textile products with Applicants' textile benefit compositions. Treatment methods include the methods disclosed in the present specification. When properly treated, said textile products comprise one or more of the following enhanced and/or durable benefits: anti-fading, anti-pilling, improved hand, anti-shrinking, and increased abrasion resistance. A textile product is considered to have one or more of such durable benefits when such textile product is tested according to Applicants' Durability Test and for the visual grading test for total appearance, the treated textile product has a positive 2 PSU unit difference or greater score than the water treated product textile product treated with water. For the instrumental color measurement a textile product is considered to have one or more of such durable benefits when such textile product, has a AE (treated with water) $-\Delta E$ (treated with a benefit composition) equal or greater than 1.

[0075] Test Methods

[0076] 1.) Durability Test

[0077] a.) Sample Size: Obtain 5 kilograms of the textile product that will be tested. Separate such material into two equal lots of 2.5 kg each.

[0078] b.) Treatment: Treat one lot with the benefit composition and the second lot with only distilled water

[0079] c.) Laundering: Laundering both lots separately as follows:

[0080] (i) Equipment: Kenmore Heavy Duty 70 Series washing machines

[0081] (ii) Wash Conditions:

[0082] Washers set on standard heavy duty for Cotton cycle.

[0083] Washers set to 32° C.

[0084] Washer fill 17 gallons with water having a hardness of 100 ppm and chlorine level 1 ppm.

[0085] (iii) Process

[0086] Add 100 grams of Tide™ liquid laundry product to each washer.

[0087] Agitate/wash for 2 minutes.

[0088] Add textile product to each washer.

[0089] Agitate/wash for 12 minutes.

[0090] Remove wash liquor by spinning.

[0091] Rinse textile products in the rinse cycle (4 minutes in 16° C. rinse water)

[0092] Remove rinse liquor by spinning.

[0093] d.) Dry both lots separately as follows:

[0094] (i) Equipment

[0095] Standard US tumble dryers supplied by Kenmore

[0096] (ii) Conditions.

[0097] Drying Time & Setting: Appropriate setting as indicated on dryer controls for the type of textile product.

[0098] (iii) Process:

[0099] Place the lots of textile products in separate dryers.

[0100] Allow dryer to run through the complete drying cycle.

[0101] At the end of the dry cycle remove the textile products

[0102] e.) Repeat Steps c and d 10 times for each lot of textile product and then evaluate said textile products according to the methods of Step f below.

[0103] f.) Textile Product Evaluation

[0104] (i) Visual Grading for Total Appearance (Panel Score Unit)

[0105] Layout textile products, for grading under D50 lighting.

[0106] Using the water treated and laundered textile product as control, grade the treated and laundered textile product as follows:

[0107] Use the +4/-4 Visual Scale.

[0108] 0=There is no difference

[0109] 1=I think there is a difference

[0123] UV filter out (UV light included)

[0124] 1 inch port size for textile products

EXAMPLES I-IV

[0125] Textile benefit compositions have the following formula are made in accordance with the method described below.

Material	Trade name/Supplier	Example 1 % Formula	Example 2 % Formula	Example 3 % Formula	Example 4 % Formula
Ester modified carboxymethyl cellulose	Finnefix/Noviant, Finland	0.10%	0.75%	0.10%	0.10%
Polyethelene Emulsion	PE 39725/Michleman, Ohio	1.00%	1.00%	1.00%	1.00%
Cationic Hydroxyethyl Cellulose	LK400/Dow Chemicals	0.20%	0.00%	0.20%	0.20%
Ethoxylated tetraethylene pentamine	PG 105/BASF	1.00%	0.00%	1.00%	1.00%
Dihydroxymethyl-4,5-dihydroxyethyleneurea	Freerez 845/Noveon, Ohio	2.00%	2.00%	0.00%	0.00%
Butanetetra-carboxylic acid	Aldrich	0.00%	0.00%	2.00%	0.00%
Polymalic Acid	Monomer sourced from Aldrich. Made in house Aldrich	0.00%	0.00%	0.00%	2.00%
Sodium hypophosphite		0.00%	0.00%	1.00%	1.00%
Wetting Agent	LEOPHEN™ N-AM/BASF	0.10%	0.10%	0.10%	0.10%
Water		Balance	Balance	Balance	Balance
Solution pH (adjusted by acetic acid)		4	4	3	3

[0110] 2=I know there is a difference

[0111] 3=I know there is a large difference

[0112] 4=I know there is a huge difference

[0113] Three graders are used. The grade is the numerical average of the three grades given.

[0114] (ii) Instrumental Grading

[0115] American Association of Textile Chemists and Colorists (AATCC) Evaluation Procedure 7: Instrumental Assessment of the change in color of a test specimen. 2004 Technical Manual, Vol. 79, Pages 391.

[0116] Use untreated laundered textile product as a reference

[0117] Equipment: Hunter Color Quest 45/0

[0118] ΔE as an indication of color difference vs reference

[0119] Color Scale: CIEL*a*b*

[0120] Instrument Geometry: 45/0 with circumferential lighting

[0121] Illuminant: D65 (noon daylight)

[0122] Observer: 10°

[0126] For each of Examples I-IV the requisite components are pre-dissolved and then combined in a standard batch mixing vessel.

[0127] Fabric Treatment

[0128] Four lots of fabric samples are obtained and each lots is soaked with one of the compositions of Examples I-IV of above. The fabrics are then padded via Mathis Padder (Model #HVF 52200) at 3 bars of pressure with at a rate of 2 feet per minute. The wet pick-ups are in the range of 75%-100% on weight of fabrics. Fabrics are then dried at 50° C. for 2 hours before curing. These fabrics are cured on a continuous feed dryer for 4 minutes at 170° C. oven space temperature.

[0129] While particular embodiments of the present invention have been illustrated and described, it would be obvious to those skilled in the art that various other changes and modifications can be made without departing from the spirit and scope of the invention. It is therefore intended to cover in the appended claims all such changes and modifications that are within the scope of this invention.

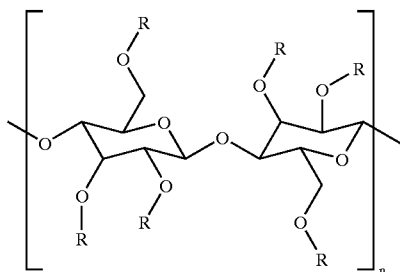
What is claimed is:

1. A composition having a pH of from about 2 to about 11 comprising:

(a) from about 0.005% to about 10% by weight of a cellulosic based polymer component;

- (b) from about 0.005% to about 20% of a material selected from the group consisting of a dispersible polyolefin, a chlorine inhibitor, a dye fixative and mixtures thereof;
- (c) from about 0.01% to about 15% of a cross-linking agent; and
- (d) an optional wetting agent the balance of said composition being a carrier.

2. A composition according to claim 1 wherein said cellulosic based polymer component comprises a hydrophobically modified carboxymethyl cellulose polymer having a weight average molecular weight of from about 10,000 Daltons to about 2,000,000 Daltons, said hydrophobically modified carboxymethyl cellulose polymer comprising repeat units having the following formula:

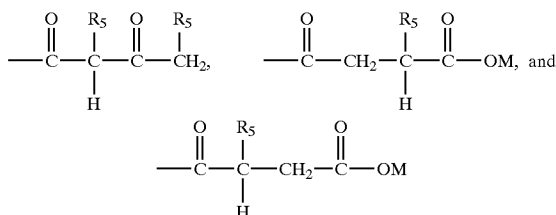


wherein:

- a.) n is a sufficiently large integer to result in said hydrophobically modified carboxymethyl cellulose polymer having a weight average molecular weight of from about 10,000 Daltons to about 2,000,000 Daltons;
- b.) each R is independently selected from the group consisting of R_H, R_C, and H;

wherein:

- (i) each R_H is independently selected from the group consisting of C₅-C₂₀ alkyl, C₅-C₇ cycloalkyl, C₇-C₂₀ alkylaryl, C₇-C₂₀ arylalkyl, substituted alkyl, hydroxyalkyl, C₁-C₂₀ alkoxy-2-hydroxyalkyl, C₁-C₂₀ alkylaryloxy-2-hydroxyalkyl, (R₄)₂N-alkyl, (R₄)₂N-2-hydroxyalkyl, C₆-C₁₂ aryloxy-2-hydroxyalkyl,



each R₄ is independently selected from the group consisting of H, C₁-C₂₀ alkyl, C₅-C₇ cycloalkyl, C₇-C₂₀ alkylaryl, C₇-C₂₀ arylalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, piperidinoalkyl, morpholinoalkyl, cycloalkylaminoalkyl and hydroxyalkyl;

each R₅ is independently selected from the group consisting of H, C₁-C₂₀ alkyl, C₅-C₇ cycloalkyl, C₇-C₂₀ alkylaryl, C₇-C₂₀ arylalkyl, substituted alkyl, hydroxyalkyl, (R₆)₂N-alkyl, and (R₆)₃N-alkyl;

each R₆ is independently selected from the group consisting of H, C₁-C₂₀ alkyl, C₅-C₇ cycloalkyl, C₇-C₂₀ alkylaryl, C₇-C₂₀ arylalkyl, aminoalkyl, alkylaminoalkyl, dialkylaminoalkyl, piperidinoalkyl, morpholinoalkyl, cycloalkylaminoalkyl and hydroxyalkyl;

wherein two R₄ or R₆ moieties on the same nitrogen can together form a ring structure selected from the group consisting of piperidine and morpholine;

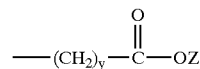
M is a suitable cation selected from the group consisting of Na, K, ½ Ca, and ½ Mg; and

provided that:

if any R_H bears a positive charge, it is balanced by a suitable anion; and

the Degree of Substitution for R_H is between about 0.0001 and 0.1;

- (ii) each R_C is



wherein each Z is independently selected from the group consisting of M, R₂ and R_H; wherein:

each M is as defined above;

each R_H is as defined above;

each R₂ is independently selected from the group consisting of H and C₁-C₄ alkyl;

each y is from about 1 to about 5; and

provided that:

the Degree of Substitution for group R_C wherein Z is H or M is between about 0.1 and 2.0.

3. A compound according to claim 2 wherein said cellulosic based polymer component comprises a material selected from the group consisting of an ether modified carboxymethyl cellulose, an ester modified carboxymethyl cellulose and mixtures thereof.

4. A composition according to claim 1 wherein said material selected from the group consisting of a dispersible polyolefin, a chlorine inhibitor, a dye fixative and mixtures thereof comprises a material selected from the group consisting of an oxidized polyethylene wax, a polyamine component, a cationic hydroxyethyl cellulose and mixtures thereof.

5. A compound according to claim 4 wherein said polyamine component comprises a material selected from the group consisting of an ethoxylated tetraethylene pentamine, a polyethyleneimine, an ethoxylated polyethyleneimine, a polyvinylpyrrolidone, a polyvinylamine, a polylysine; a bis-hexamethylenediamine and mixtures thereof.

6. A composition according to claim 1 wherein said cross-linking agent comprises a material selected from the

group consisting of methylol and alkoxymethyl derivatives of urea and of ethylene and propylene urea, multifunctional carboxylic acids and mixtures thereof.

7. A composition according to claim 2 comprising:

- a.) from about 0.05% to about 2% by weight of said cellulosic based polymer component;
- b.) from about 0.05% to about 5% of said material selected from the group consisting of a dispersible polyolefin, a chlorine inhibitor, a dye fixative and mixtures thereof; and
- c.) from about 0.1% to about 10% of said cross-linking agent.

8. A composition having a pH of from about 2 to about 11 comprising:

- a.) from about 0.01% to about 10% by weight of a chlorine inhibitor;
- b.) from about 0.005% to about 20% of a material selected from the group consisting of a dispersible polyolefin, a cellulosic based polymer component, a dye fixative and mixtures thereof;
- c.) from about 0.01% to about 15% of a cross-linking agent; and
- d.) an optional wetting agent the balance of said composition being a carrier.

9. A composition according to claim 8 wherein said cellulosic based polymer component comprises a hydrophobically modified carboxymethyl cellulose polymer

10. A compound according to claim 9 wherein said cellulosic based polymer component comprises a material selected from the group consisting of an ether modified carboxymethyl cellulose, an ester modified carboxymethyl cellulose and mixtures thereof.

11. A composition according to claim 8 wherein said dispersible polyolefin comprises an oxidized polyethylene wax.

12. A compound according to claim 8 wherein said chlorine inhibitor comprises a polyamine component.

13. A composition according to claim 12 wherein said polyamine component comprises a material selected from the group consisting of an ethoxylated tetraethylene pentamine, a polyethyleneimine, an ethoxylated polyethyleneimine, a polyvinylpyrrolidone, a polyvinylamine, a polylysine; a bis-hexamethylenediamine and mixtures thereof.

14. A composition according to claim 7 wherein said cross-linking agent comprises a material selected from the group consisting of methylol and alkoxymethyl derivatives

of urea and of ethylene and propylene urea, multifunctional carboxylic acids and mixtures thereof.

15. A composition according to claim 12 comprising

- a.) from about 0.1% to about 3% by weight of said chlorine inhibitor;
- b.) from about 0.05% to about 5% of said material selected from the group consisting of a dispersible polyolefin, a cellulosic based polymer component, a dye fixative and mixtures thereof; and
- c.) from about 0.1% to about 10% of said cross-linking agent.

16. A method of treating a textile product comprising the steps of:

- a.) contacting at least a portion of a textile product with the composition of claim 1;
- b.) removing a sufficient amount of said composition of claim 1 from said textile product to achieve a wet pick-up of from about 30% to about 200%; and
- c.) drying and curing at least the portion of said textile product that was in contact with said composition of claim 1.

17. The method of claim 16 wherein said textile product is treated prior to said textile product being used by end user.

18. The method of claim 17 wherein said textile product wherein said contacting step comprises an operation selected from saturating, spraying, padding, exhaustion and combinations thereof.

19. A method of treating a textile product comprising the steps of:

- a.) contacting at least a portion of a textile product with the composition of claim 8;
- b.) removing a sufficient amount of said composition of claim 8 from said textile product to achieve a wet pick-up of from about 30% to about 200%; and
- c.) drying and curing at least the portion of said textile product that was in contact with said composition of claim 8.

20. The method of claim 19 wherein said textile product is treated prior to said textile product being used by end user.

21. The method of claim 20 wherein said textile product wherein said contacting step comprises an operation selected from saturating, spraying, padding, exhaustion and combinations thereof.

22. A textile product comprising a durable benefit.

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