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(54) Laundry pre-spotting composition

(57) The present invention is directed to the use of a non-solid detergent composition comprising (a) more than 50 to 100 % by weight of one or more alkoxylated alcohols having at least 6 C atoms in the alcohol portion and an average degree of alkoxylation of greater than 2, (b) optionally up to 10 % by weight of an antifoaming agent, and (c) optionally a solvent in an amount adding up to 100 % by weight, each based on the total weight of the detergent composition, to promote the removal of soils or stains from washable textiles and fabrics. The detergent composition is preferably used for pre-spotting soiled or stained textiles and fabrics before laundering.

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Description

[0001] The present invention relates to detergent compositions comprising high amounts of specific nonionic surfactants and their use to promote the removal of soil, especially hydrophobic soil, from washable fabrics. More particularly, the present invention is directed to the use of the detergent compositions for pre-spotting soils originating from UV screening agents.

[0002] Detergent pretreatment or pre-spotting compositions are contacted with a soiled location or a spotted deposit on a fabric item prior to a conventional laundry cleaning step and are supposed to provide enhanced soil removal. Various types of pretreatment or pre-spotting compositions are known in the art.

[0003] WO 00/20542 is directed to a laundry pretreatment composition capable of treating hydrophobic and organic particulate soils in a laundry item, the composition comprising (a) 1 to 50 % by weight of a hydrophilic surfactant ethoxylate composition having an HLB of 10 to 20 and comprising the formula R^1-$(OC_2H_4)_0$-$(OC_3H_6)_n$-OH, wherein n+o > 4 and R_1 is an aromatic or aliphatic hydrophilic group of 6 to 24 carbon atoms and (b) 1 to 50 % by weight of a hydrophobic alcohol ethoxylate surfactant composition of the formula R_2-$(OC_2H_4)_p$-OH, wherein R_2 is a straight or branched chain fatty alkyl group containing from 6 to 24 carbon atoms and p is a number of less than 2.

[0004] WO 97/20094 describes a cleaning composition for pretreating stains on laundry items. The cleaning composition is an oil-in-water or water-in-oil emulsion or a solution and comprises in one embodiment (i) 3 to 90 % by weight of a non-aqueous hydrophobic solvent and 5 to 50 % by weight of a mixed non-aqueous system comprising (ii) a first nonionic surfactant having an alkyl chain comprising 11 or less C atoms and (iii) a second nonionic surfactant having an alkyl chain comprising 12 or more carbon atoms. A preferred class of short chain nonionic surfactants are secondary C_5-C_{11} alcohol ethoxylates comprising 1 to 7 ethylene oxide groups and a preferred class of long chain nonionic surfactants are C_{12}-C_{16} fatty alcohol polyglycol ethers comprising 2 to 7 ethylene oxide groups.

[0005] US 4,861,517 A relates to laundry pretreatment compositions containing ternary mixtures of surfactants, co-surfactants and water which are particularly suitable for removing oily and greasy soil from fabrics. A preferred pretreatment composition comprises (a) from 25 to 45 % by weight of an alkyl polyglycol ether containing 6 to 10 ethylene oxide groups and 12 to 18 carbon atoms in the alkyl alcohol groups; (b) from 35 to 40 % by weight of a co-surfactant consisting of C_5 or C_6 monoalcohols or adducts thereof optionally containing up to 2 ethylene oxide groups and (c) from 40 to 5 % by weight of water.

[0006] GB 2 042 580 A concerns an aqueous liquid laundry pre-spotting composition comprising from 10 to 50 % by weight of a nonionic detergent, from 20 to 60 % by weight of an organic solvent, from 5 to 20 % by weight of water, an enzyme and a mono-, di- or trialkanolamine. The clear stable compositions are efficacious against fatty and proteinaceous soils and the nonionic detergent can be a C_{13}-C_{15} primary alcohol condensed with 7 moles of ethylene oxide plus propylene oxide.

[0007] Further, there are various references teaching the use of solid laundry pretreatment compositions in stick form for pre-spotting onto stained fabric: EP 0 318 470 A2, US 3,417,023 A, US 4,396,521, US 5,490,948 A, US 4,842,762 A, US 4,289,644 A.

[0008] EP 0 318 470 A2 refers to a laundry pretreatment composition in stick form comprising 10 to 90 % by weight of a water-soluble surfactant binder and 10 to 90 % by weight of a bleach activator. A suitable binder system for the stick form composition comprises ethoxylated alcohol compounds, especially derivates of C_{12}-C_{18} alkyl alcohols comprising 2 to 20 ethoxy moieties, preferably 3 to 5 or 12 to 16 ethoxy moieties.

[0009] US 3,417,023 A is directed to a detergent stick consisting essentially of 60 to 99 % by weight of a gelled soap matrix being a mixture of 1 to 10 % by weight of a soap and 60 to 95 % by weight of an alcohol; 1 to 10 % by weight of a synthetic detergent selected from a nonionic, e.g. an alkoxylated higher aliphatic alcohol, an anionic or a cationic detergent, and from 0.1 to 5 % by weight of a brightening agent.

[0010] US 4,396,521 A describes a detergent spotting stick comprising (A) 2 to 25 % by weight of a soap component, (B) 5 to 88 % by weight of a synthetic detergent component, (C) 10 to 70 % by weight of a high-boiling solvent component containing both water soluble and insoluble solvents; and (D) water constituting 0.1 to 35 parts per 100 parts of the aforementioned components. In one embodiment the synthetic detergent comprises the reaction product of about 2 to 50 moles of ethylene oxide with 1 mole of a saturated aliphatic alcohol, preferably a primary alkanol, of about 8 to 20 carbon atoms.

[0011] US 5,490,948 A discloses a solid pre-spotting composition comprising (a) a gelling agent such as a soap or a polymeric material, e.g. methyl cellulose etc., (b) more than 15 to less than 60 % by weight of water; (c) more than 9 to less than 60 % by weight of organic solvent(s), and (d) more than 0 to less than 50 % by weight of a surfactant, e.g. a nonionic surfactant such as an ethoxylated alcohol.

[0012] US 4,842,762 A teaches a pre-laundering composition in a solid stick form including a laundry enzyme, a bodying agent and a surfactant, preferably a surfactant system containing both nonionic and anionic surfactants, e.g. a linear alkylbenzene sulfonate and a linear alcohol ethoxylate, alkylphenol ethoxylate or polyethylene glycol. The detergent compositions described in the examples contain 13 to 16 % by weight of a linear alcohol ethoxylate.

[0013] US 4,289,644 A concerns a solid pre-wash stick cleaner comprising 70 % by weight of balanced hydrocarbon/ detergent system consisting of paraffinic hydrocarbon solvents and nonionic detergents in a 80:20 mixture; 15 % by weight of tallow soap; and 15 % by weight of sorbitol solution. A suitable nonionic detergent is an ethoxylated secondary alcohol having a carbon chain length of 15 and the equivalent of 3 ethylene oxide units.

[0014] Hydrophobic soils are amongst the most widespread soils on fabrics and often turn out to be very difficult to remove. Fabrics that have been into contact with sunscreen products often show very stubborn soils or stains probably originating from the UV screening agents contained in the sunscreens. None of the above cited prior art references mentions the application of the detergent pretreatment compositions on fabrics soiled by sunscreen products. While available pretreatment compositions have some utility in treating certain types of soils and stains, the removal of hydrophobic soils, especially those originating from sunscreen products, could still be improved. Known treatment compositions fail to remove or at least significantly reduce stains or soils originating from sunscreen products. It is thus an object of the present invention to provide a detergent composition for the improved removal of hydrophobic soils, especially those originating from sunscreen products. Moreover, the disadvantages resulting from the application of a detergent composition in stick form, such a poor penetration into the fabric, should be avoided.

[0015] The object is met by the use of a non-solid detergent composition comprising

(a) more than 50 to 100 % by weight of one or more alkoxylated alcohols having at least 6 C atoms in the alcohol portion and an average degree of alkoxylation of greater than 2,
(b) optionally up to 10 % by weight of an antifoaming agent, and
(c) optionally a solvent in an amount adding up to 100 % by weight, each based on the total weight of the detergent composition, to promote the removal of soils or stains from washable textiles and fabrics.

[0016] The present invention is further directed to a non-solid detergent composition comprising:

(a) 50 to 99.95 % by weight of one or more alkoxylated alcohols having at least 6 C atoms in the alcohol portion and an average degree of alkoxylation of greater than 2;
(b) 0.05 to 10 % by weight of an antifoaming agent,
(c) optionally a solvent in an amount adding up to 100 % by weight, and each based on the total weight of the detergent composition.

[0017] Another aspect of the present invention is a method for removing soils or stains form washable textiles and fabrics which method comprises

(i) applying the non-solid detergent composition comprising

(a) more than 50 to 100 % by weight of one or more alkoxylated alcohols having at least 6 C atoms in the alcohol portion and an average degree of alkoxylation of greater than 2,
(b) optionally up to 10 % by weight of an antifoaming agent, and
(c) optionally a solvent in an amount adding up to 100 % by weight, each based on the total weight of the detergent composition, to the soiled or stained area of a washable textile or fabric;

(ii) letting the detergent composition work in for a sufficient time period; and
(iii) laundering the textile or fabric by machine or hand washing.

[0018] The present detergent composition is used to pretreat various types of soils and stains on washable textiles and fabrics and is especially useful to pretreat hydrophobic soils or stains. The detergent composition considerably reduces the soils or stains, preferably, it substantially removes the soils or stains and more preferably, it removes the soils or stains. Hydrophobic soils or stains include all types of greasy and oily soils of either petrochemical or natural origin as well as mixtures of various hydrophobic materials. Typical soils of petrochemical origin include mineral greases, mineral oils and derived products. Hydrophobic soils of natural origin include plant and vegetable oils and fats which comprise mixed triglycerides of fatty acids. Both mineral and natural fats are used in all kinds of cosmetic and pharmaceutical compositions so that soils and stains from these compositions are a frequent nuisance well known to the user. The present detergent compositions are very effective in removing soils and stains originating from cosmetic and pharmaceutical compositions, especially sunscreen products. Besides a variety of different hydrophobic materials e.g. triglycerides, sunscreen products comprise one or more UV screening agents, typically a combination of UV-A and UV-B screening agents. It is believed that the UV screening agents, especially the UV-A screening agents, are responsible for the stubborn soils or stains that are left behind on the fabric after contact with a sunscreen product. It has been shown that residues of UV screening agents i.e. UV-A and UV-B screening agents, particularly UV-A screening agents, can

successfully be removed or at least considerably lightened by treatment with the present detergent compositions. Typical UV-A screening agents include dibenzoylmethane derivatives, such as 4-tert-butyl-4'-methoxydibenzoylmethane (INCI: Butyl Methoxydibenzolymethane).

[0019] The present detergent compositions can be used to treat all types of washable textiles and fabrics. Washable textiles and fabrics include any laundry items such as garments, table linens, bed linens, towels, diapers, blankets, pillows, sleeping bags, washable covers and other washable items such as washable shoes and soft toys. Washable textiles and fabrics do not include non-removable upholsteries, carpets and similar floor coverings.

[0020] The washable textiles and fabrics may be made of different materials such as natural fibers from plants, e.g. cotton, linen, and hemp, and natural fibers from animals, e.g. wool, silk, and angora, including modified natural fibers (e.g. viscose fibers); synthetics, e.g. polyamide and polyester; and mixed fabrics. The present detergent compositions are particularly efficacious on cotton and cotton blend fabrics.

[0021] The textile to be treated with the present detergent composition may be knitted, including jersey, woven or be a fleece type material. In certain cases the washable item comprises a textile or fabric in combination with another material including filling materials of synthetic or natural origin.

[0022] The present detergent compositions are used to promote the removal of soils or stains, typically by pretreating or pre-spotting the soiled or stained textiles and fabrics before laundering. The final laundering is performed by hand washing or in a conventional laundry machine, including institutional and domestic laundry machines, using conventional laundry detergent materials.

[0023] In the pre-spotting step the present detergent composition is applied to the soiled or stained area of the washable textile or fabric, preferably by gently rubbing it onto or into the textile, e.g. by means of a brush. It is advantageous to let the detergent composition work in for a sufficient time period prior to laundering. The duration of exposure depends on the type of soil and fabric, a longer duration generally leading to better washing results. Preferably, the detergent composition is let work in for at least one hour, more preferably at least 6 hours, even more preferably at least 8 hours, still more preferably at least 12 hours and most preferably about 16 hours. The maximum duration is only governed by practical considerations and up to 24 hours are a typical duration. For the ease of application the detergent compositions are often let work in "overnight" what leads to good washing results.

[0024] If desired the final laundering step may be repeated to further improve the washing result. However, the use of the present detergent composition in the pretreatment step (i) generally already removes the soils or stains or at least considerably reduces the soiling when the laundering step is only performed once.

[0025] The present invention is directed to detergent composition comprising more than 50, typically more than 55, preferably more than 60, more preferably more than 65, even more preferably more than 70 and most preferably more than 73 % by weight and up to 100, typically up to 99.5, preferably up to 98, more preferably up to 95, even more preferably up to 90 and most preferably up to 85 % by weight of the one or more alkoxylated alcohols, each based on the total weight of the detergent composition.

[0026] It may be desired to include an antifoaming agent into the present detergent composition as — depending on the type of alkoxylated alcohol — excessive foaming may become a problem in the final laundering step if this is performed in a washing machine. Thus, in one embodiment of the present invention the non-solid detergent composition further comprises 0.05 to 10, preferably 0.1 to 5, more preferably 0.3 to 3 and most preferably 0.5 to 1 % by weight of an antifoaming agent, each based on the total weight of the detergent composition.

[0027] The present detergent composition may optionally comprise one or more additional conventional additives in a total amount of up to 10 % by weight, preferably up to 5 % by weight, and more preferably up to 3 % by weight, based on the total weight of the detergent composition.

[0028] A solvent constitutes the remainder of the present detergent composition in an amount adding up with the other ingredients to 100 % by weight. The maximum amount of solvent is 50 % by weight and typically, the non-solid detergent composition comprises 0.5 to 45, preferably 2 to 40, more preferably 5 to 35, even more preferably 10 to 30 and most preferably 15 to 25 % by weight of a solvent, each based on the total weight of the detergent composition.

[0029] The one or more ethoxylated alcohols which are the main component of the present detergent composition are the reaction products (condensation products) of an alcohol having at least 6 C atoms and an alkylene oxide, typically ethylene oxide and/or propylene oxide resulting in ethoxylated, propoxylated or mixed ethoxylated-propoxylated alcohols, the ethoxylated alcohols being preferred. According to the invention, the average degree of alkoxylation, preferably ethoxylation, is greater than 2, typically a least 3, preferably of from 3 to 25, more preferably of from 3 to 15, even more preferably of from 3 to 10, still more preferably of from 3 to 8 and most preferably of from 4 to 7. Especially preferred are ethoxylated alcohols having an average degree of ethoxylation of 4 or 7.

[0030] The alkoxylated alcohols for use in the present invention, especially including those described above as preferred embodiments, have at least 6 C atoms in the alcohol portion. They can be described as C_{6+} alkyl polyglycol ethers, preferably C_{6+} alkyl poly(ethylene glycol)ethers, preferably C_6-C_{22} alkyl polyglycol ethers and more preferably C_9-C_{20} alkyl polyglycol ethers, the poly(ethylene glycol) ethers being preferred. The alkyl radical originates from the alcohol used in the above described condensation reaction with the alkylene oxide. Typically, the alcohol is a primary alcohol.

Fatty alcohols and oxoalcohols are preferred. According to the general definition fatty alcohols include primary linear saturated and unsaturated alcohols having 6 to 22 carbon atoms. "Oxoalcohol" is a common term used to describe largely primary unbranched and branched higher alcohols that are prepared by the oxo process (hydroformylation of olefins). Other alkoxylated alcohols that may be used herein are derived from Guerbet and Ziegler alcohols. Guerbet alcohols are obtained from the self-condensation of alcohols in the presence of sodium or copper at about 200°C and high pressure; an illustrative Guerbet alcohol is 2-octyl-1-dodecanol (Eutanol®). Ziegler alcohols are primary linear alcohols having 10 to 22 C atoms and are prepared according to the Ziegler Alfol process by oligomerizing ethylene and subsequent oxidation. They can be regarded as the petrochemical counterpart of fatty alcohols. Alkoxylated alcohols derived from saturated alcohols are generally preferred. Mixtures of various alcohols including mixtures of fatty alcohols and oxoalcohols can also be used.

[0031] Especially preferred alkoxylated alcohols, including those preferred embodiments described above with respect to the alkoxylation part, for use in the present invention include a mixture of alkoxylated saturated C_{12} to C_{18} fatty alcohols (comprising C_{12}, C_{14}, C_{16} and C_{18} fatty alcohols); a mixture of alkoxylated saturated C_{13} and C_{15} oxoalcohols which are primarily non-branched, preferably comprising 67% C_{13} and 33 % C_{15}; and alkoxylated saturated branched C_{13} oxoalcohols. A typical fatty alcohol distribution of the C_{12} to C_{18} fatty alcohol mixture is 48 to 58 % by weight of C_{12}, 18 to 24 % by weight of C_{14}, 8 to 12 % by weight of C_{16} and 11 to 15 % by weight of C_{18}.

[0032] Illustrative commercially available alkoxylated alcohols for use in the present invention are: a mixture of ethoxylated saturated C_{12} to C_{18} fatty alcohols having an average of about 7 ethylene oxide units ("EO" in the following) (Dehydol® LT 7); a mixture of ethoxylated saturated C_{12} to C_{18} fatty alcohols having an average of about 5 EO (Dehydol® LT 5); a mixture of ethoxylated saturated C_{12} and C_{14} fatty alcohols having an average of about 4 EO (Dehydol® LS 4 N); a mixture of ethoxylated saturated C_{13} and C_{15} oxoalcohols (67% C_{13} and 33 % C_{15}) which are primarily non-branched and have an average of about 7 EO (Lutensol® AO 7); a mixture of ethoxylated saturated C_{13} and C_{15} oxoalcohols (67% C_{13} and 33 % C_{15}) which are primarily non-branched and have an average of about 8 EO (Lutensol® AO 8); ethoxylated saturated branched C_{13} oxoalcohols having an average of about 5 EO (Lutensol® TO 5); and ethoxylated C_{10} Guerbet alcohols having an average of about 8 EO (Lutensol® XL 80). All Dehydol® brands are available from Gognis GmbH, Germany, and all Lutensol® brands are available from BASF SE, Germany.

[0033] The present detergent composition may contain any type of antifoaming agent. Examples of suitable antifoaming agents include silicone-based antifoams, paraffin-based antifoams, mixed ethers (symmetric or asymmetric dialkyl ethers obtainable by reacting fatty alcohol polyglycol ethers with alkyl halides) and long-chain soaps. Silicone-based antifoams (e.g. Silfoam® SD 167, available form Wacker Chemie AG, Germany) are preferred. Although it is possible to use soaps as an ingredient of the present detergent composition it is preferred that the detergent composition is free of any soaps.

[0034] The solvent that may be contained in the present detergent composition may be water or an organic solvent. The term "solvent" includes single solvents and mixtures of solvents. The organic solvent may be a water-miscible or a water-immiscible solvent. Suitable organic solvents include mono- and polyhydric (typically dihydric and trihydric) alcohols, e.g. ethanol, isopropanol, ethylene glycol, propylene glycol, and glycerol; poly(ethylene glycol)s; poly(propylene glycol)s; esters; ketones; ethers; aliphatic and aromatic hydrocarbons including halogenated hydrocarbons; and mixtures of the aforementioned solvents. Preferably, the present detergent composition is free of any water-immiscible organic solvent such as hydrocarbons and halogenated hydrocarbons, and more preferably the solvent is water.

[0035] In addition to the above mentioned components the present detergent composition may comprise one or more conventional additives such as a perfume, an enzyme, a complexing agent, a colorant, a thickener and an additional surfactant different from the alkoxylated alcohols described above. The additional surfactant may be selected from further nonionic surfactants including amine oxide derivatives having one long chain and two short chain alkyl groups, anionic surfactants, cationic surfactants and amphoteric surfactants (including ampholytic and zwitterionic surfactants). The present detergent compositions are preferably free of a surfactant different from an alkoxylated alcohol and more preferably they are free of a surfactant different from the alkoxylated alcohols defined above. It is further preferred that the present detergent composition does not contain any bleaching compound such as a bleach activator.

[0036] The detergent composition according to the present invention is non-solid, i.e. it is not in the form of a stick. It may be a liquid ranging from low viscosity liquids to high viscosity liquids up to a paste-like consistency. For the ease of application, the detergent composition according to the present invention typically has a paste-like consistency. The paste-like consistency may be obtained by forming a gel. Certain mixtures of the above described alkoxylated alcohols with an appropriate solvent lead to stable gels by themselves. It is within the skill of a person skilled in the art to conduct some experiments in order to determine the appropriate amounts of alkoxylated alcohol and solvent to form a gel. Phase diagrams of various alkoxylated alcohols in water are for example depicted in "The Aqueous Phase Behaviour of Surfactants", by Robert G. Laughlin (ISBN 0-12-497745-0). Information on the gelling behaviour of the alkoxylated alcohols in water is also provided by the manufacturers of those surfactants, e.g. in the technical information sheets from BASF SE: Lutensol® TO Marken, TI/EMV 1029 d, August 2008; Lutensol® XL Marken, TI/EMV 1470 d, July 2008; and Lutensol® AO Marken, TI/EMV 1070 d, August 2008. It is preferred that no additional gelling agent is contained in the present detergent composition.

[0037] The alkoxylated alcohols for use in the present detergent compositions have a wide range of HLB values and preferably the HLB values are from 7 to 18, more preferably from to 8 to 16, even more preferably from 10 to 14, and most preferably from 10 to 13.

EXAMPLES

Preparation of detergent compositions:

[0038] 100 kg samples of detergent compositions were prepared by mixing the following components and 0.50 kg of a silicon-based antifoam per sample:

Ex.#	Type of Alkoxylated Alcohol	Amount of Alkoxylated Alcohol / kg	Amount of water / kg
Ex. 1 (LT7)	Dehydol® LT 7	78.60	20.90
Ex. 2 (AO8)	Lutensol® AO 8	78.60	20.90
Ex. 3 (XL80)	Lutensol® XL 80	78.60	20.90
Ex. 4 (LS4N)	Dehydol® LS 4 N	78.60	20.90
Ex. 5 (LT5)	Dehydol® LT 5	79.90	19.60
Ex. 6 (TO5)	Lutensol® TO 5	73.80	25.70
Ex. 7 (A07)	Lutensol® AO 7	81.60	17.90

[0039] If desired 1.00 kg of water may be replaced by 1.00 kg of a perfume.
Dehydol® LT 7is a mixture of ethoxylated saturated C_{12} to C_{18} fatty alcohols having an average of about 7 ethylene oxide units ("EO" in the following); HLB = 12-13.
Dehydol® LT 5 is a mixture of ethoxylated saturated C_{12} to C_{18} fatty alcohols having an average of about 5 EO.
Dehydol® LS 4 N is a mixture of ethoxylated saturated C_{12} and C_{14} fatty alcohols having an average of about 4 EO; HLB = 10-11.
Lutensol® AO 7 is a mixture of ethoxylated saturated C_{13} and C_{15} oxoalcohols (67% C_{13} and 33 % C_{15}) which are primarily non-branched and have an average of about 7 EO; HLB = 12.5.
Lutensol® AO 8 is a mixture of ethoxylated saturated C_{13} and C_{15} oxoalcohols (67% C_{13} and 33 % C_{15}) which are primarily non-branched and have an average of about 8 EO; HLB = 12.5.
Lutensol® TO 5 are ethoxylated saturated branched C_{13} oxoalcohols having an average of about 5 EO; HLB = 10.5.
Lutensol® XL 80 are ethoxylated C_{10} Guerbet alcohols having an average of about 8 EO; HLB = 13.
All Dehydol® brands are available from Gognis GmbH, Germany, and all Lutensol® brands are available from BASF SE, Germany.

Test Procedure:

[0040] Different types of soil were brought onto different types of fabrics which were prewashed 3 times with 75 ml of a color detergent before application of the soil.
[0041] About 0.2 g of each of the sunscreen products of Tables 1 and 2 were applied onto the fabrics within an area of about 4 to 6 cm^2. The effectiveness of the detergent compositions of the present invention was also tested on stains originating from curry sauce and lipstick (Table 3).
[0042] All stains were then pretreated by gently rubbing a generous amount of the detergent compositions according to Examples 1 to 7 into the fabric so that the whole stain was wetted with the composition. The detergent composition was let work into the fabric for about 24 hours. Afterwards, the fabrics were machine washed in a Miele W1734 at 40°C using the washing program "normal" with 60 ml of a color detergent.
[0043] The stains on the washed fabrics were rated by visual inspection according to the Hohenstein system:

1 removed completely
2 very slightly visible
3 clearly visible
4 strongly visible
5 very strongly visible

[0044] The Hohenstein ratings shown in Tables 1,2, and 3 are average values of at least 5 application/washing cycles.

[0045] The results depicted in Table 1 to 3 show that the detergent compositions of the present invention are effective to considerably lighten various types of stains, including those originating from sunscreen products.

Table 1: Hohenstein ratings of sunscreen stains after pretreatment and laundering

	Blank Experiment: No Pretreatment, only Machine Washing	**Comparative Ex.: Pretreatment with Sil Spezial Flecken-Spray ***	**Ex. 5 (LT5)**	**Ex. 6 (TO5)**	**Ex. 1 (LT7)**	**Ex. 7 (A07)**
Standard Cotton (wfk Testgewebe GmbH)						
Sun Dream Kindersonnenmilch LSF 30	3.50	4.83	3.17	3.75	3.00	3.33
Ombra Sonnencreme LSF 12	4.00	4.00	1.50	1.50	1.50	1.50
AS Sun Care Kinderspray LSF 25	5.00	4.58	3.58	4.00	3.25	3.00
Robinsun Feuchtigkeitssonnenmilch LSF 20	3.50	3.92	2.42	2.08	2.17	2.25
Ombia Sun Kindersonnenmilch LSF 30	1.83	3.50	1.67	1.92	2.00	2.00
Ambre Solaire Sonnenmilch LSF 20	4.50	5.00	1.58	1.50	1.60	1.50
Loreal Solar Expertise LSF 30	4.00	4.00	1.92	1.83	1.67	1.50
Avon Kindersonnenspray LSF 30	5.00	4.50	2.33	2.42	2.17	2.33
Robinsun Feuchtigkeitssonnenmilch LSF 30	4.00	4.50	2.58	2.67	3.00	2.92
Robinsun Sunspray für Kinder LSF 30	5.00	4.00	3.00	3.33	3.00	3.17
Average Cotton wfk	**4.03**	**4.28**	**2.38**	**2.50**	**2.34**	**2.35**
Jersey 100 % Cotton						
Sun Dream Kindersonnenmilch LSF 30	3.42	5.00	3.42	4.33	2.50	2.92
Ombra Sonnencreme LSF 12	3.00	3.50	2.00	2.17	1.50	1.67
AS Sun Care Kinderspray LSF 25	5.00	4.50	3.25	3.40	3.08	3.33

(continued)

	Blank Experiment: No Pretreatment, only Machine Washing	Comparative Ex.: Pretreatment with Sil Spezial Flecken-Spray *	Ex. 5 (LT5)	Ex. 6 (TO5)	Ex. 1 (LT7)	Ex. 7 (A07)
Robinsun Feuchtigkeitssonnenmilch LSF 20	3.00	4.00	1.92	2.00	1.83	2.00
Ombia Sun Kindersonnenmilch LSF 30	2.00	3.50	2.67	3.00	2.33	2.67
Ambre Solaire Sonnenmilch LSF 20	4.00	5.00	3.00	3.00	3.00	3.00
Loreal Solar Expertise LSF 30	4.00	4.50	2.83	3.00	2.50	2.67
Avon Kindersonnenspray LSF 30	4.50	4.00	2.33	3.33	2.00	2.33
Robinsun Feuchtigkeitssonnenmilch LSF 30	3.50	4.00	2.25	2.50	1.67	2.00
Robinsun Sunspray für Kinder LSF 30	5.00	4.50	3.75	3.92	3.08	3.75
Average Jersey 100 % Cotton	**3.74**	**4.25**	**2.74**	**3.07**	**2.35**	**2.63**
Cotton Polyester Mixed Fabric (Logtex) (45 % Cotton, 65 % Polyester)						
Sun Dream Kindersonnenmilch LSF 30	3.50	4.50	3.33	4.00	3.17	3.33
Ombra Sonnencreme LSF 12	3.50	3.00	2.50	2.50	2.50	2.50
AS Sun Care Kinderspray LSF 25	5.00	4.00	3.08	3.50	2.83	2.67
Robinsun Feuchtigkeitssonnenmilch LSF 20	3.00	4.00	1.00	1.00	1.00	1.00
Ombia Sun Kindersonnenmilch LSF 30	1.83	2.50	1.00	1.00	1.00	1.00
Ambre Solaire Sonnenmilch LSF 20	4.17	4.50	1.00	1.00	1.00	1.00
L'Oréal Solar Expertise LSF 30	4.50	4.50	1.75	1.50	1.92	1.58
Avon Kindersonnenspray LSF 30	5.00	4.50	3.00	3.50	2.67	3.08

(continued)

	Blank Experiment: No Pretreatment, only Machine Washing	Comparative Ex.: Pretreatment with Sil Spezial Flecken-Spray *	Ex. 5 (LT5)	Ex. 6 (TO5)	Ex. 1 (LT7)	Ex. 7 (A07)
Robinsun Feuchtigkeitssonnenmilch LSF 30	4.00	4.00	2.00	2.00	2.00	2.00
Robinsun Sunspray für Kinder LSF 30	5.00	4.50	3.42	3.75	3.42	3.25
Average Cotton Polyester	**3.95**	**4.00**	**2.21**	**2.38**	**2.15**	**2.14**
Total Average	**3.91**	**4.18**	**2.44**	**2.65**	**2.28**	**2.38**
*available from Henkel AG & Co. KGaA, Germany (contains 5 — 15 % nonionic detergents, more than 30 % aliphatic hydrocarbons;						

Table 2: Hohenstein ratings of sunscreen stains after pretreatment and laundering

	Blank Experiment: No Pretreatment, only Machine Washing	Ex. 1 (LT7)	Ex. 2 (AO8)	Ex. 3 (XL80)	Ex. 4 (LS4N)
Standard Cotton (wfk Testgewebe GmbH)					
AS Sun Care Sonnencreme LSF 10	2.70	1.50	1.70	1.60	1.50
Robinsun Feuchtigkeitssonnenmilch LSF 20	2.90	2.10	1.70	2.00	1.60
L'Oréal Solar Expertise LSF 30	2.60	1.80	1.80	1.80	1.70
Robinsun Feuchtigkeitssonnenmilch LSF 30	3.60	1.80	2.00	1.90	2.00
Average Cotton WFK	**2.95**	**1.80**	**1.80**	**1.83**	**1.70**
Jersey 100 % Cotton					
AS Sun Care Sonnencreme LSF 10	3.00	2.10	2.20	2.50	1.80
Robinsun Feuchtigkeitssonnenmilch LSF 20	3.00	2.70	2.20	2.00	2.00
L'Oréal Solar Expertise LSF 30	3.50	2.00	2.00	2.80	1.90

(continued)

	Blank Experiment: No Pretreatment, only Machine Washing	Ex. 1 (LT7)	Ex. 2 (AO8)	Ex. 3 (XL80)	Ex. 4 (LS4N)
Robinsun Feuchtigkeitssonnenmilch LSF 30	3.30	2.20	2.20	2.20	2.70
Average Jersey 100 % Cotton	**3.20**	**2.25**	**2.15**	**2.38**	**2.10**

Table 3: Hohenstein ratings of stains originating from curry sauce and lipstick after pretreatment and laundering

	Blank Experiment: No Pretreatment, only Machine Washing	Ex. 1 (LT7)	Ex. 2 (A08)	Ex. 3 (XL80)	Ex. 4 (LS4N)
Standard Cotton (wfk Testgewebe GmbH)					
Knorr Feinschmecker Curry Sauce	5.00	3.40	3.60	4.10	4.00
Lipstick (L'Oréal, Berry Blush, 258)	1.70	1.60	1.50	1.50	1.50

Claims

1. Use of a non-solid detergent composition comprising

(a) more than 50 to 100 % by weight of one or more alkoxylated alcohols having at least 6 C atoms in the alcohol portion and an average degree of alkoxylation of greater than 2,
(b) optionally up to 10 % by weight of an antifoaming agent, and
(c) optionally a solvent in an amount adding up to 100 % by weight, each based on the total weight of the detergent composition,
to promote the removal of soils or stains from washable textiles and fabrics.

2. The use of claim 1 to promote the removal of hydrophobic soils or stains.

3. The use of claim 1 or 2 to promote the removal of soils or stains originating from sunscreen products.

4. The use of claim 3, wherein the soils or stains originate from a UV screening agent.

5. The use of any of the preceding claims, wherein the detergent composition is used for pre-spotting soiled or stained textiles and fabrics before laundering.

6. The use of any of the preceding claims, wherein the detergent composition comprises (b) 0.05 to 10 % by weight of an antifoaming agent, based on the total weight of the detergent composition.

7. The use of any of the preceding claims, wherein the detergent composition comprises one or more ethoxylated alcohols having at least 6 C atoms in the alcohol portion and an average degree of ethoxylation of greater than 2, preferably of from 3 to 25.

8. The use of any of the preceding claims, wherein the one or more alkoxylated alcohols have 6 to 22, preferably 9 to 20 carbon atoms in the alcohol portion.

9. The use of any of the preceding claims, wherein the one or more alkoxylated alcohols are ethoxylated fatty alcohols

or ethoxylated oxoalcohols or a mixture thereof.

10. The use of claim 9, wherein the one or more ethoxylated alcohols are a mixture of ethoxylated saturated C_{12} to C_{18} fatty alcohols.

11. The use of claim 9, wherein the one or more ethoxylated alcohols are a mixture of ethoxylated saturated C_{13} and C_{15} oxoalcohols.

12. The use of claim 9, wherein the one or more ethoxylated alcohols are ethoxylated saturated branched C_{13} oxoalcohols.

13. The use of any of the preceding claims, wherein the detergent composition has a paste-like consistency

14. A non-solid detergent composition comprising:

(a) 50 to 99.95 % by weight of one or more alkoxylated alcohols having at least 6 C atoms in the alcohol portion and an average degree of alkoxylation of greater than 2;
(b) 0.05 to 10 % by weight of an antifoaming agent,
(c) optionally a solvent in an amount adding up to 100 % by weight, and each based on the total weight of the detergent composition.

15. The detergent composition according to claim 14 which is defined as in any of claims 6 to 13.

16. A method for removing soils or stains from washable textiles or fabrics, which method comprises:

(i) applying the non-solid detergent composition as defined in any of claims 1 to 14 to the soiled or stained area of a washable textile or fabric;
(ii) letting the detergent composition work in for a sufficient time period; and
(iii) laundering the textile or fabric by machine or hand washing.

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EUROPEAN SEARCH REPORT

Application Number
EP 10 00 7036

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 3 741 902 A (BARRETT J) 26 June 1973 (1973-06-26)	1-4, 7-10,12, 13,16	INV. C11D1/72 C11D11/00
Y	* examples 2-6 * * Control I *	1-16	

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Y	* Formulation 15 * * Composition B of Example 4 *	1-16	

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TECHNICAL FIELDS SEARCHED (IPC)

C11D

The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
Munich	10 December 2010	Culmann, J

CATEGORY OF CITED DOCUMENTS

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10-12-2010

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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