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(54) Title: LAUNDRY PRETREATMENT COMPOSITION

(57) Abstract: Disclosed is an aqueous laundry pre-treatment composition comprising: (i) 0.5 wt% to 15 wt% of a surfactant which is a non-ionic surfactant or an ethoxylated anionic surfactant or a mixture thereof; (ii) 0.5 wt% to 8 wt% of at least one non-neutralised fatty acid having pKa greater than 5 at 20 °C; (iii) 0.5 wt% to 5 wt% of at least one organic acid having pKa of 2 to 5 at 20 °C, and (iv) 0.5 wt% to 10 wt% of a water-insoluble fatty acid ester. The compositions provides significant enhancement in stain removal index, especially against oily/sebaceous stains deposited on cotton or polycotton fabrics.

LAUNDRY PRETREATMENT COMPOSITION

Field of the invention

The invention relates to laundry pretreatment compositions which are especially useful against stained cotton or polycotton fabrics.

Background of the invention

Motor oil, mechanical grease and other hydrophobic oily stains are difficult to remove to a satisfactory extent from fabrics, especially cotton and polycotton. Therefore consumers often use various laundry pre-treatment compositions for some additional stain removal benefits.

The methods known for pre-treatment of stained fabrics may be classified into one-step and two-step methods. A typical two-step method usually involves step-wise treatment of stained fabrics with two separate components/compositions. In a first step, stained fabrics are contacted with a first component which is a stain-removing pre-treatment composition. In the second step the pretreated fabrics are washed with a laundry detergent composition.

Various types and formats of stain removing compositions are known. Such compositions are usually efficacious against a particular stain or a class of stains. It is generally observed that oily stains have more affinity towards some fabrics e.g., cotton and polycotton and therefore they are more difficult to be dislodged therefrom.

WO2013092184 A1 (Unilever) discloses a method for treating soiled fabrics to make them more amenable to cleaning during the wash cycle, in particular making the fabric more hydrophilic, and thereby increasing the removal of oily stains. The composition has a metal salt like polyaluminium chloride and a carboxylic polymer, an organic acid and a polysaccharide.

Stain removal is important from the point of view of the detergents industry. A robust method to dislodge significant amount of stains from stained fabrics could lead to sustainable use of detergent products or may even allow detergent compositions to used at lower temperatures and save energy. Therefore there is need to aid and improve the detergency, especially against oily and sebaceous stains, on hydrophilic fabrics like cotton or polycotton.

GB338121 A (Marquardt and Walter, 1930) discloses a 2-step method. Application of a first component having non-neutralised saponifiable fatty acids such as oleic acid, palmitic acid, or stearic acid is followed by a second component which is alkaline.

A shear-thinning gel detergent composition is disclosed in US2004/058838 A1 (Unilever). The composition contains non-neutralized fatty acids in specified amounts depending on the total surfactant content. This product offers dual advantages of pre-treatment and main-wash detergency of a single product. A laundry pre-treatment composition having at least 55 wt% fatty acids with melting point greater than 20 °C, a polyhydric alcohol binder, water and a surfactant is disclosed in WO10023043 A1 (Unilever).

US2005/090412 A1 (Unilever) discloses a gel laundry detergent composition/pre-treatment composition of pH 7, having anionic surfactant, non-neutralised fatty acids, non-ionic surfactant and sodium citrate. A somewhat similar formulation is disclosed in US205/0176610 A1 (Unilever).

WO2011/163457 Al (P&G) discloses laundry detergent compositions, which have pH around 8.

EP2767582 A1 (P&G) discloses detergent compositions which do not contain any water-insoluble esters of fatty acids.

WO2015/135866 A1 (Henkel) discloses detergent and pretreatment compositions which do not contain any water-insoluble esters of fatty acids.

US4457857 A (Sepulveda Ralph R, 1984) discloses liquid stain release compositions that contain alkyl esters from 25 to 100 wt%, admixed with a non-ionic surfactant.

EP0256354 A1 (Henkel, 1988) discloses laundry pretreatment compositions which contain a solvent, a fatty acid ester from 10 to 90 wt%. The compositions are devoid of organic acids.

However at least some of the prior art compositions are not effective enough against the more substantive oily or sebaceous stains.

Therefore there is need for laundry pre-treatment compositions which provides a technical solution.

Summary of the invention

We have found that a composition comprising a surfactant, a non-neutralised fatty acid having pKa greater than 5, an organic acid having pKa of 2 to 5, and 0.5 wt% to 10 wt% of a water-insoluble fatty acid ester, act synergistically against oily or sebaceous stains on fabrics, especially on cotton and polycotton.

In accordance with a first aspect is disclosed an aqueous laundry pre-treatment composition comprising:

(i) 0.5 wt% to 15 wt% of a surfactant which is a non-ionic surfactant or an ethoxylated anionic surfactant or a mixture thereof;

(ii) 0.5 wt% to 8 wt% of at least one non-neutralised fatty acid having pKa greater than 5 at 20 °C;

(iii) 0.5 wt% to 5 wt% of at least one organic acid having pKa of 2 to 5 at 20 °C, and

(iv) 0.5 wt% to 10 wt% of a water-insoluble fatty acid ester.

In accordance with a second aspect is disclosed an aqueous laundry pre-treatment composition of the first aspect for use in a fabric washing process involving cotton or polycotton fabric stained with oily or sebaceous stains, to provide enhancement in the Stain Removal Index (SRI) by at least two units according to the Reflectometer method.

In accordance with a third aspect is disclosed use of an aqueous laundry pre-treatment composition of the first aspect for providing enhancement in the Stain Removal Index (SRI) by at least two units on cotton or polycotton fabric stained with oily or sebaceous stains according to the Reflectometer method.

In accordance with a fourth aspect is disclosed a method of removing oily or sebaceous stains from stained fabrics, comprising a step of contacting a portion of said stained fabric with 0.5 ml to 5 ml of a composition of the first aspect, followed by cleaning the contacted fabric with aqueous laundry wash liquor or by dry cleaning.

Detailed description of the invention

Hydrophilic fibres, such as cotton, have more affinity for water as compared to oil. During laundering, water displaces oily soil from the surface of the fabric, causing the soil to "roll-up"; the soil is then readily removable by mechanical action. Polyester fibers, such as those made from the copolymer of ethylene glycol and terephthalic acid, do not have this preferential affinity for water, but rather, are hydrophobic. It is observed that ordinary laundering often does not satisfactorily remove oily soils from fabrics because such stains are highly substantive to such fabrics.

The present invention provides a laundry pretreatment composition which can loosen-up the stains thereby rendering their removal more facile during washing.

The compositions in accordance with the invention are aqueous. In other words, the compositions comprise significant amount of water. It is preferred that the compositions have from 60 wt% to 95 wt% water. Further preferably the compositions have 70 to 95 wt% water. Water forms a continuous aqueous phase in the compositions and it provides a medium for easy application on to stained fabrics.

Surfactant

Compositions in accordance with this invention comprise 0.5 wt% to 15 wt% of a

surfactant which is a non-ionic surfactant or an ethoxylated anionic surfactant or a mixture thereof. In other words, the surfactant is either solely a non-ionic surfactant or an ethoxylated anionic surfactant or alternatively a mixture of the two amounting to 0.5 wt% to 15 wt%.

A surfactant is necessary for detergency and to create an emulsion with the continuous aqueous phase.

As is well known, nonionic surfactants are characterized by the presence of a hydrophobic group and an organic hydrophilic group and are typically produced by condensation of an organic aliphatic or alkyl aromatic hydrophobic compound with ethylene oxide (hydrophilic in nature).

Usually, the nonionic surfactants are polyalkoxylated lipophiles wherein the desired hydrophile-lipophile balance (HLB) is obtained from addition of a hydrophilic alkoxy group to a lipophilic moiety. A preferred class of nonionic surfactants is the alkoxylated alkanols in which the alkanol is of 9 to 20 carbon atoms and wherein the number of moles of alkylene oxide (of 2 or 3 carbon atoms) is from 5 to 20. Of such materials, it is preferred to use those wherein the alkanol is a fatty alcohol of 9 to 11 or 12 to 15 carbon atoms and which contain from 5 to 8 or 5 to 9 alkoxy groups per mole. Also preferred are paraffin-based alcohols (e.g. nonionic surfactants from Huntsman or Sassol).

Exemplary of such compounds are those in which the alkanol is of 10 to 15 carbon atoms and which contain about 5 to 12 ethylene oxide groups per mole, e.g. Neodol™ family. These are condensation products of a mixture of higher fatty alcohols averaging about 12 to 15 carbon atoms with about 9 moles of ethylene oxide. The higher alcohols are primary alkanols.

Another subclass of alkoxylated surfactants which could be used contain a precise alkyl chain length rather than an alkyl chain distribution of the alkoxylated surfactants. Typically, these are referred to as narrow range alkoxylates. Examples of these include the Neodol™-1 series of surfactants.

Other useful non-ionic suracfants are represented by the commercially well-known class of non-ionic surfactants sold under the trademark Plurafac™ from BASF. The Plurafac™ are the reaction products of a higher linear alcohol and a mixture of ethylene and propylene oxides, containing a mixed chain of ethylene oxide and propylene oxide, terminated by a hydroxyl group. Examples include C13-C15 fatty alcohols condensed with 6 moles ethylene oxide and 3 moles propylene oxide, C13-C15 fatty alcohol condensed with 7 moles propylene oxide and 4 moles ethylene oxide, C13-C15 fatty alcohol condensed with 5 moles propylene oxide and 10 moles ethylene oxide or mixtures of any of the above.

Another group of nonionic surfactants are commercially available as Dobanol™ which is an ethoxylated C12-C15 fatty alcohol with an average of 7 moles ethylene oxide per mole of fatty alcohol.

Compositions in accordance with the present invention could have non-ionic surfactant as the sole surfactant. It is then preferred that the compositions have from 2 to 8 wt% non-ionic surfactant and more preferably from 3 to 6 wt% non-ionic surfactant.

Alternatively, the surfactant present in compositions in accordance with this invention could be solely an ethoxylated anionic surfactant. This surfactant may have a normal or branched chain alkyl group containing lower ethoxy groups with two or three carbon atoms. A general formula of such surfactants is $RO(C_2H_40)_xSO_3^-M^+$ where R is an alkyl chain having from 10 to 22 carbon atoms, saturated or unsaturated, M is a cation which makes the compound water-soluble, especially an alkali metal, ammonium or substituted ammonium cation, and x averages from 1 to 15. Preferably R is an alkyl chain having from 12 to 16 carbon atoms, M is sodium and x averages from 1 to 3, more preferably x is 1. It is particularly preferred that the ethoxylated anionic surfactant is sodium lauryl ether sulphate (SLES). It is the sodium salt of lauryl ether sulphonic acid in which the predominantly C12 lauryl alkyl group is ethoxylated with an average of 1 to 7 moles of ethylene oxide per mole.

Other examples of suitable ethoxylated anionic surfactants that could be used in

accordance with the present invention are C12-C15 normal or primary alkyl triethoxy sulphate, sodium salt; n-decyl diethoxy sulphate, sodium salt; C12 primary alkyl diethoxy sulphate, ammonium salt; C12 primary alkyl triethoxy sulfate, sodium salt; C15 primary alkyl tetraethoxy sulfate, sodium salt; mixed C14-15 normal primary alkyl mixed tri- and tetraethoxy sulfate, sodium salt; stearyl pentaethoxy sulfate, sodium salt; and mixed C10-18 normal primary alkyl triethoxy sulfate, potassium salt.

When the compositions in accordance with the invention comprise a mixture of said non-ionic surfactant and said ethoxylated anionic surfactant, the ratio of the amount of said non-ionic surfactant to that of said ethoxylated anionic surfactant is in the range of 1:0.2 to 1:2 parts by weight.

The organic acid

Compositions in accordance with the invention comprise 0.5 wt% to 5 wt% of at least one organic acid having pKa of 2 to 5 at 20 °C. It is preferred that the amount of organic acid is 0.5 to 3 wt%.

Any organic acid may be used so long as the pKa is 2 to 5 at 20 °C. It is preferred that the organic acid is glycolic acid, citric acid, maleic acid or lactic acid or a mixture thereof. The mixture may have two or more of these acids.

Non-neutralised fatty acid

The compositions in accordance with this invention also have 0.5 wt% to 5 wt% of at least one non-neutralised fatty acid having pKa greater than 5 at 20 °C. Non-neutralized fatty acids provide additional benefits of gelling and structuring.

The term pKa insofar as it relates to fatty acids, is well documented. For example, reference may be made to a scientific publication in Journal of Colloid and Interface Science 256, 201–207 (2002) bearing the title, Effect of Degree, Type, and Position of Unsaturation on the pKa of Long-Chain Fatty Acids. This publication inter-alia indicates that the pKa of Stearic acid is 10.15 and that of Oleic acid is 9.85.

Any fatty acid is suitable, including but not limited to lauric, myristic, palmitic stearic, oleic, linoleic, linolenic acid, and mixtures thereof, preferably those fatty acids which would not form crispy solids at room temperature. Naturally obtainable fatty acids, which are usually complex mixtures are also suitable (such as tallow, coconut, and palm kernel fatty acids). A preferred fatty acid is oleic acid because it is liquid at room temperature and its C18 chain helps to induce lamellar phase.

Industrial grade distilled coconut fatty acids is a mixture of fatty acids containing C8 acid to C18 fatty acids. Also industrial grade Oleic acid is a mixture of fatty acids having C14 acid to C18 fatty acid. The difference in alkyl chain length in such a mixture of fatty acids can weaken the Van der Waals interaction between fatty acid molecules, and this may lower the pKa as compared to the pure form of the fatty acid.

The amount of the non-neutralized fatty acid would depend on the amount and the type of surfactant present. It is preferred that the amount of non-neutralised fatty acids is 0.5% to 6 wt%, more preferably from 0.5 to 5 wt%.

Water-insoluble fatty acid ester

The compositions in accordance with the invention comprise 0.5 wt% to 10 wt% of a water-insoluble fatty acid ester. It is preferred that the water-insoluble fatty acid ester is at least one of methyl, ethyl or lauryl laurate, isopropyl stearate, isopropyl, methyl, ethyl or butyl myristate, methyl, ethyl, isopropyl, butyl or octyl palmitate, isopropyl linoleate, methyl, ethyl or stearyl oleate, lauryl acetate, lauryl caproate or lauryl lactate. It has been determined that addition of the fatty acid esters lead to further improvement in the stain removal. It is further preferred that the ester is methyl laurate, methyl oleate, butyl laurate or isopropyl myristate or a mixture thereof.

Further, it is preferred that pH of the compositions in accordance with this invention is in the range of 2 to 5.

Further surfactants

The compositions of the invention may further comprise other surfactants over and above the surfactants described earlier. However, such additional surfactants may have no influence or limited influence on the viscosity profile of the composition. The compositions of this invention may comprise further surfactants selected from anionic, amphoteric, zwitterionic and combinations thereof. Cationic surfactants are not preferred.

Examples of such further surfactants suitable for inclusion herein can be found in "Surface Active Agents" Vol. 1 , by Schwartz & Perry, Interscience 1949, Vol. 2 by Schwartz, Perry & Berch, Interscience 1958, in the current edition of "McCutcheon's Emulsifiers and Detergents" published by Manufacturing Confectioners Company or in "Tenside-Taschenbuch", H. Stache, 2nd Edn., Carl Hauser Verlag, 1981.

Other Optional Ingredients

The compositions of the invention may optionally comprise other ingredients, such as fragrances, preservatives and colorants, foam boosting agents, preservatives (e.g. bactericides), pH buffering agents, polyelectrolytes and anti-oxidants,

The fabric

The fabric (also referred to herein as textile/cloth) may be any fabric such as cotton (woven, knitted and denim), polyester (woven, knitted and micro fibre), nylon, silk, polycotton (polyester/cotton blends), polyester elastane, cotton elastane, viscose rayon, acrylic or wool. The composition and method in accordance with the invention is particularly suitable for hydrophilic fabrics and more particularly for cotton or polycotton. Therefore it is preferred that the hydrophilic fabric is cotton or polycotton.

Other fabrics that can be treated include the other synthetic and natural fabrics. It is envisaged that the method can be used to treat garments and other clothing and apparels that form a typical wash-load in household laundry. The household materials that can be treated include, but are not limited to, bedspreads, blankets, carpets, curtains and upholstery.

The stains

The stain may be any oily stain or sebaceous stain. Accordingly, in a preferred embodiment of the method, the stained portion of the fabric substantially contains oily or sebacious stains. They are predominately solid in nature and such stains usually come into contact with fabrics in the course of their regular use. Non-limiting examples include tomato oil stain, curry oil stain, dirty motor oil and sebum derived stains.

Use of the Composition and Method

In another aspect is disclosed an aqueous laundry pre-treatment composition as claimed in claim 1 for use in a fabric washing process involving cotton or polycotton fabric stained with oily or sebaceous stains, to provide enhancement in Stain Removal Index (SRI) by at least one unit. The term SRI is well known to persons skilled in the art and is widely used in patent and non-patent technical literature. In substance, the SRI indicates efficacy of any laundry/laundry treatment composition. Greater the index better is the composition.

In accordance with a further aspect is disclosed use of an aqueous laundry pre-treatment composition for the first aspect for providing enhancement in Stain Removal Index (SRI) by at least one unit on cotton or polycotton fabric stained with oily or sebaceous stains.

In accordance with a yet further aspect is disclosed a method of removing oily or sebaceous stains from stained fabrics comprising a step of contacting a portion of said stained fabric with 0.5 ml to 5 ml of a composition of the first aspect, followed by cleaning contacted fabric with aqueous laundry wash liquor or by dry cleaning.

The method preferably comprises an aqueous washing process. The stained fabrics may be soaked in the composition according to the invention, or alternatively, the composition may be applied either neat or in diluted form to the stained fabrics. Alternatively or additionally, the pretreatment step may comprise the step of soaking the substrate in an aqueous solution to which the treatment composition has been added.

The second step of the method of the invention may be a 'main' wash and may be a manual washing process or a washing in a machine. The second step may use any suitable detergent composition. Preferably this detergent composition comprises one or more surfactants and/or other functional ingredients.

Preferably the method of the invention requires less than 90 minutes in duration, more preferably less than 60 minutes and most preferably less than 30 minutes. In pre-treatment embodiments, the pre-treatment step preferably requires less than 5 minutes, and more preferably less than 2 minutes.

Preferably the pretreatment composition is ambient-active. Accordingly, the temperature of the wash liquor step of aqueous washing process is therefore less than 40 °C and preferably less than 30 °C and more preferably less than 25 °C and more preferably less than or equal to 22 °C further more preferably 15 °C or less at all times during the washing but excluding drying.

The following specific examples further illustrate the invention, but the invention is not limited thereto.

Examples

Example 1: Enhancement of stain removal index provided by compositions inside and outside the invention

Table 1 shows some of the important parameters/variables related to Example 1, followed by some explanation of the term SRI.

Table 1

Parameters/Variables	Details
Machine used	Terg-o-tometer™
Wash Cycle	20 minutes-15 minutes-2 minutes-2 minutes
Aqueous laundry wash liquor contained	1.5 g/litre laundry detergent composition
Ancillary applied	1.0 ml on each stain
Liquor to cloth ratio	50
Water hardness	24 FH (Ca:Mg was 2:1)
Pre-Soaking time	10 minutes (after pretreatment)
Fabric Type	Knitted Cotton
Detergent powder	Surf® Excel Quick Wash

Procedure to determine SRI:

SRI is a measure of how much of a stain on textile is removed during washing. The intensity of any stain can be measured by means of a Reflectometer in terms of the difference between the stain and a clean cloth giving ΔE* for each stain. It is defined as ΔE* and is calculated as given below:

$$SRI = 100 - \sqrt{(L_{bw} - L_{aw})^2 + (a_{bw} - a_{aw})^2 + (b_{bw} - b_{aw})^2}$$

L*, a*, and b* are the coordinates of the CIE 1976 (L*, a*, b*) colour space, determined using a standard reflectometer . ΔE* can be measured before and after the stain is washed, to give AE*bw (before wash) and AE*aw (after wash).

SRI of 100 means complete removal of a stain. ΔE after wash is the difference in L a b colour space between the clean (unwashed) fabric and the stain after wash. So a ΔE after wash of zero means a stain that is completely removed. Therefore, a SRI aw (aw: after wash) of 100 is a completely removed stain. The clean (or virgin) fabric is an "absolute standard" which is not washed. For each experiment, it refers to an identical piece of fabric to that to which the stain is applied. Therefore, its point in L a b colour space stays constant.

For the determination of the SRI, a standard protocol was used, called the Tergometer (also called Tergotometer) wash protocol.

Said Tergometer wash protocol has the following steps:

1. Measurement of the colour of the stain on the textile cloth (before washing).
2. Switch on the Tergometer and set to a temperature of 30°C.
3. Add water of required hardness, leave to heat to 30°C for 10 minutes.
4. Add formulation to each pot and then agitate at 100 rpm for 1 minute
5. Add the stained swatches and ballast into each pot.
6. Start the wash, agitate at 100 rpm and leave to wash for 12 minutes.
7. Rinse with fresh water (26°FH) for 2 minutes.
8. Repeat rinse.
9. Dry overnight in the dark.
10. Read stains after wash.

The details of the compositions that were prepared and subjected to SRI studies thereafter, is shown in table 2.

Table 2

Ingredients/wt%	Compositions outside the invention						Compositions inside the invention	
	A	B	C	D	E	F	G	H
C12 Fatty alcohol (7 EO)	5	5	5	5	5	5	5	5
Sodium lauryl ether sulphate, 2 EO	5	5	5	5	5	5	5	5
Citric acid	--	1	--	1	--	--	1	1
Methyl laurate	--	--	5	5	5	--	--	5
Distilled coconut fatty acids	--	--	--	--	5	5	5	5
Water	90	89	85	84	80	85	84	79
Stain Removal Index (SRI)	79	86	81	87	89	88	91	93

Note: The pH of all the above compositions was in the range of 2 to 5, except A.
Note: Composition G is outside the invention although mentioned otherwise in the Table.

The data given in table 2 indicates that the SRI values of compositions outside the invention are lower than the SRI provided by compositions inside the invention. Composition H also shows further technical effect of the water-insoluble fatty acid ester, which in this case was methyl laurate.

Example 2: Comparison of citric acid and sodium citrate

The following two compositions were prepared and tested against each other in the same manner as described earlier. The objective of this experiment was to find out how citric acid fares against citrate salt, i.e., sodium citrate. The results are also summarised in table 3.

Table 3

Ingredients/wt%	I	J
Sodium lauryl ether sulphate, 2 EO	10	10
Citric acid	--	1
Sodium citrate	1	--
Distilled coconut fatty acids	5	5
Water	84	84
pH	5.9	2.5
SRI against Dirty motor oil (DMO)	82	85

The data in table 3 clearly shows the significant enhancement in SRI brought about by citric acid. Composition I is outside the scope of the invention. Such a technical effect of citric acid was hitherto unknown. The above table additionally demonstrates the technical effect of pH.

Example 3: SRI of various fatty acid esters

Details of the compositions and the observed SRI values are summarised in table 4.

Table 4

Ingredients/wt%	Compositions				
	K	L	M	N	O
Sodium lauryl ether sulphate 2 EO	10	10	10	10	10
Citric acid	1	1	1	1	1
Methyl laurate	--	1	--	--	--
Methyl oleate	--	--	1	--	--
Butyl laurate	--	--	--	1	--
Isopropyl myristate	5	5	5	5	--
Distilled coconut fatty acids	5	5	5	5	5
Water	84	79	79	79	79
SRI against DMO	89	93	89	89	84
SRI against sebum	97	99	95	99	95

The data in table 4 proves that there is significant enhancement in SRI brought about by each ester. The data further strengthens the technical effect that is achievable by way of the present invention because it provides significant formulation flexibility as far as the ester is concerned. Composition O is outside the invention.

Example 4: SRI obtained through various organic acids having pKa of 2 to 5

Details of the compositions and the observed SRI values are summarised in table 5.

Table 5

Ingredients/wt%	Compositions			
	P	Q	R	S
Sodium lauryl ether sulphate 2 EO	10	10	10	10
Citric acid	1	--	--	--
Succinic acid	--	1	--	--
Maleic acid	--	--	1	--
Acetic acid	--	--	--	1
Methyl laurate	5	5	5	5
Distilled coconut fatty acids	5	5	5	5
Water	79	79	79	79
pH	2.3	3.0	1.5	3.2
SRI against DMO	93	93	92	93
SRI against cooking oil	95	94	94	94
SRI against sebum	99	99	99	99

The data in table 5 clearly shows significant enhancement in SRI through various acids. The data further strengthens the technical effect that is achievable by way of the present invention because it provides significant formulation flexibility as far as the organic acids having pKa of 2 to 5 are concerned.

Claims

1. An aqueous laundry pre-treatment composition comprising:
   (i) 0.5 wt% to 15 wt% of a surfactant which is a non-ionic surfactant or an ethoxylated anionic surfactant or a mixture thereof;
   (ii) 0.5 wt% to 8 wt% of at least one non-neutralised fatty acid having pKa greater than 5 at 20 °C;
   (iii) 0.5 wt% to 5 wt% of at least one organic acid having pKa of 2 to 5 at 20 °C, and,
   (iv) 0.5 wt% to 10 wt% of a water-insoluble fatty acid ester.

2. An aqueous laundry pre-treatment composition as claimed in claim 1 wherein said organic acid is glycolic acid, citric acid, maleic acid or lactic acid or a mixture thereof.

3. An aqueous laundry pre-treatment composition as claimed in claim 1 or 2 wherein said water-insoluble fatty acid ester is at least one of methyl, ethyl or lauryl laurate, isopropyl stearate, isopropyl, methyl, ethyl or butyl myristate, methyl, ethyl, isopropyl, butyl or octyl palmitate, isopropyl linoleate, methyl, ethyl or stearyl oleate, lauryl acetate, lauryl caproate or lauryl lactate or a mixture thereof.

4. An aqueous laundry pre-treatment composition as claimed in any preceding claim 1 to 3 wherein when said composition comprises a mixture of said non-ionic surfactant and said ethoxylated anionic surfactant, the ratio of the amount of said non-ionic surfactant to that of said ethoxylated anionic surfactant is in the range of 1:0.2 to 1:2 parts by weight.

5. An aqueous laundry pre-treatment composition as claimed in any preceding claim 1 to 4 wherein pH of said composition is 2 to 5.

6. An aqueous laundry pre-treatment composition as claimed in preceding claim 1 to 5 wherein said composition provides enhancement in Stain Removal Index (SRI) by

at least one unit, against oily or sebaceous stains deposited on cotton or polycotton fabric according to the Reflectometer method.

7. An aqueous laundry pre-treatment composition as claimed in claim 1 for use in a fabric washing process involving cotton or polycotton fabric stained with oily or sebaceous stains, to provide enhancement in Stain Removal Index (SRI) by at least one unit according to the Reflectometer method.

8. Use of an aqueous laundry pre-treatment composition as claimed in claim 1 for providing enhancement in Stain Removal Index (SRI) by at least one unit on cotton or polycotton fabric stained with oily or sebaceous stains according to the Reflectometer method.

9. Use as claimed in claim 8 wherein said oily stains are a result of contact of said fabric with at least one of dirty motor oil, mechanical grease or cooking oil.

10. A method of removing oily or sebaceous stains from stained fabrics comprising a step of contacting a portion of said stained fabric with 0.5 ml to 5 ml of a composition as claimed in claim 1, followed by cleaning contacted fabric with aqueous laundry wash liquor or by dry cleaning.

11. A method as claimed in claim 10 wherein said aqueous laundry wash liquor comprises 1 to 5 g/litre of a laundry detergent composition.

12. A method as claimed in claim 11 wherein liquor: cloth ratio is in the range of 30 to 100 parts by weight.

13. A method as claimed in any preceding claim 10 to 12 wherein said step of washing said contacted fabric comprises a step of soaking said contacted fabric in said water comprising said laundry detergent composition for a period of 2 to 30 minutes.

INTERNATIONAL SEARCH REPORT

International application No
PCT/EP2016/062225

A. CLASSIFICATION OF SUBJECT MATTER
INV. C11D1/37 C11D1/83 C11D3/20
ADD.

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
C11D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

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[X] Further documents are listed in the continuation of Box C.

[X] See patent family annex.

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"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
5 September 2016	12/09/2016

Name and mailing address of the ISA/	Authorized officer
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C(Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

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