Title: LAUNDRY LIQUID COMPOSITION

Abstract: Storage-stable compositions comprising soil release polymers. Compositions are described comprising - A) of from 45 to 55 % by weight of one or more polymers according to the following formula (I) wherein - R and R' independently of one another are X-(OC 2H)n-(OC 1H6)m wherein X is C-alkyl, the -(OC 2H)n groups and the -(OC 1H6)m groups are arranged block-wise and the block consisting of the -(OC H)n groups is bound to a COO group or are HO-(C 2H)n HO-(C 2H)n HO-(C 2H)n HO-(C 2H)n of from 24 to 42 % by weight of water, the amounts in each case being based on the total weight of the composition. The compositions may advantageously be used in laundry detergent and fabric care products. Process for making laundry liquid compositions comprising said active blend.
Declarations under Rule 4.17:

— as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(H))

— as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(Hi))

Published:

— of inventorship (Rule 4.17(i))

— with international search report (Art. 21(3))
The invention relates to laundry liquid compositions comprising polyesters and methods for making compositions comprising polyesters.


DE 10 2007 005 532 A1 describes aqueous formulations of soil release oligo- and polyesters with a low viscosity.

EP 0 964 015 A1 discloses soil release oligoesters that may be used as soil release polymers in detergents and that are prepared using polyols comprising 3 to 6 hydroxyl groups.

EP 1 661 933 A1 is directed to at room temperature flowable, amphiphilic and nonionic oligoesters prepared by reacting dicarboxylic acid compounds, polyol compounds and water-soluble alkylene oxide adducts and their use as additive in washing and cleaning compositions.

Accordingly and in regard to a first aspect there is provided an alkaline laundry liquid composition comprising at least 1% by weight triethanolamine, at least 5% non-soap surfactant and at least 0.5% a polyester provided as an active blend comprising:

A) from 45 to 55% by weight of the active blend of one or more polyesters according to the following formula (I)

\[
R^1-O-C\overbrace{\begin{array}{c}O \\
\text{C-O-C}_3\text{H}_6\text{-O-C}_a \end{array}}^{\text{I}}-O-C^\text{O-R^2}
\]

wherein

\(R^1\) and \(R^2\) independently of one another are \(X-(\text{OC}_2\text{H}_4)^n-(\text{OC}_3\text{H}_6)^m\) wherein \(X\) is \(\text{C}_1-4\) alkyl and preferably methyl, the \(-(\text{OC}_2\text{H}_4)\) groups and the \(-(\text{OC}_3\text{H}_6)\) groups are arranged blockwise and the block consisting of the \(-(\text{OC}_3\text{H}_6)\) groups is bound to a COO group or are \(\text{HO-}(\text{OC}_3\text{H}_6)\), and preferably are independently of one another \(X-(\text{OC}_2\text{H}_4)^n-(\text{OC}_3\text{H}_6)^m\),
n is based on a molar average a number of from 12 to 120 and preferably of from 40 to 50,
m is based on a molar average a number of from 1 to 10 and preferably of from 1 to 7, and
a is based on a molar average a number of from 4 to 9 and

B) from 10 to 30 % by weight of the active blend of one or more alcohols selected from the group consisting of ethylene glycol, 1,2-propylene glycol, 1,3-propylene glycol, 1,2-butyleneglycol, 1,3-butyleneglycol, 1,4-butyleneglycol and butyl glycol and

C) from 24 to 42 % by weight of the active blend of water.

By active blend is meant that it is preformed and added to the remainder of the laundry liquid composition, or to components which ultimately form the laundry liquid composition.

Preferably, butyl glycol has the following structure: \( \text{CH}_3(\text{CH}_2)_3\text{OCH}_2\text{CH}_2\text{OH} \).

Surprisingly, the active blend is based on water and on solvents that are not easily flammable.

Aqueous or aqueous-alcoholic solutions of the polyesters often possess a relatively good stability when stored at 5 °C. However, when stored at 25 °C for a longer period of time and even faster at elevated temperatures of from 30 to 50 °C, that may occur during transport or storage, non-inventive compositions of the polyesters at first show a turbidity during storage that later results in massive precipitations. These precipitations cannot be dissolved again at 80 °C, meaning that the respective products may not be regarded as being storage-stable, and their properties are changed irreversibly by storage at elevated temperature.

The active blend is sufficiently storage-stable, also at elevated temperatures.

The active blend compositions preferably are solutions at 25 °C.

In the polyesters of component A) group "X" is \( \text{C}_1-4 \) alkyl and preferably is methyl.

In a preferred embodiment of the invention the polyesters of component A) of the inventive compositions are according to the following formula (I)
wherein

$R^1$ and $R^2$ independently of one another are $H_3C-(OC2H_4)n-(OC3H_6)m$ wherein the -(OC2H4) groups and the -(OC3H6) groups are arranged blockwise and the block consisting of the -(OC3H6) groups is bound to a COO group or are $HO-(C3H_6)_m$, and preferably are independently of one another $H3C-(OC2H_4)n-(OC3H_6)m$.

$n$ is based on a molar average a number of from 40 to 50.

$m$ is based on a molar average a number of from 1 to 7, and

$a$ is based on a molar average a number of from 4 to 9.

In the polyesters of component A) of the inventive compositions variable "a" based on a molar average preferably is a number of from 5 to 8 and more preferably is a number of from 6 to 7.

In the polyesters of component A) of the inventive compositions variable "m" based on a molar average preferably is a number of from 2 to 5.

In the polyesters of component A) of the inventive compositions variable "n" based on a molar average preferably is a number of from 43 to 47, more preferably is a number of from 44 to 46 and even more preferably is 45.

In one particularly preferred embodiment of the invention the polyesters of component A) of the inventive compositions are according to the following formula (I)

\[
R^1-O-C \quad 3H_6-O-C \quad \begin{array}{c}
\text{O} \\
\text{C-O-C} \\
\end{array} \quad a \quad \begin{array}{c}
\text{O} \\
\text{C-O-R} \\
\end{array}
\]

wherein

$R^1$ and $R^2$ independently of one another are $H_3C-(OC2H_4)n-(OC3H_6)m$ wherein the -(OC2H4) groups and the -(OC3H6) groups are arranged blockwise and the block consisting of the -(OC3H6) groups is bound to a COO group,

$n$ is based on a molar average a number of from 44 to 46,

$m$ is based on a molar average 2, and

$a$ is based on a molar average a number of from 5 to 8.
Among these polyesters the polyesters according to formula (I)

\[
R^1\text{O}\text{C} \left[ \begin{array}{c}
\text{O} \\
\text{OC}_2\text{H}_4 \text{O} \text{C}_3\text{H}_6 \text{O} \text{C} \\
\text{OC}_2\text{H}_4 \text{O} \text{C}_3\text{H}_6 \text{O} \text{C} \\
a \\
\text{CO} \text{O} \text{R}^2
\end{array} \right] (I)
\]

wherein

\( R^1 \) and \( R^2 \) independently of one another are \( \text{H}_3\text{C}-(\text{OC}2\text{H}4)n-(\text{OC}3\text{H}6)m \) wherein the \( -(\text{OC}2\text{H}4) \) groups and the \( -(\text{OC}3\text{H}6) \) groups are arranged blockwise and the block consisting of the \( -(\text{OC}3\text{H}6) \) groups is bound to a COO group,

\( n \) is based on a molar average \( 45 \),

\( m \) is based on a molar average \( 2 \), and

\( a \) is based on a molar average a number of from \( 6 \) to \( 7 \) are especially preferred.

In another particularly preferred embodiment of the invention the polyesters of component A) of the inventive compositions are according to the following formula (I)

\[
R^1\text{O}\text{C} \left[ \begin{array}{c}
\text{O} \\
\text{OC}_2\text{H}_4 \text{O} \text{C}_3\text{H}_6 \text{O} \text{C} \\
\text{OC}_2\text{H}_4 \text{O} \text{C}_3\text{H}_6 \text{O} \text{C} \\
a \\
\text{CO} \text{O} \text{R}^2
\end{array} \right] (I)
\]

wherein

\( R^1 \) and \( R^2 \) independently of one another are \( \text{H}_3\text{C}-(\text{OC}2\text{H}4)n-(\text{OC}3\text{H}6)m \) wherein the \( -(\text{OC}2\text{H}4) \) groups and the \( -(\text{OC}3\text{H}6) \) groups are arranged blockwise and the block consisting of the \( -(\text{OC}3\text{H}6) \) groups is bound to a COO group,

\( n \) is based on a molar average a number of from \( 44 \) to \( 46 \),

\( m \) is based on a molar average \( 5 \), and

\( a \) is based on a molar average a number of from \( 5 \) to \( 8 \).

Among these polyesters the polyesters according to formula (I)

\[
R^1\text{O}\text{C} \left[ \begin{array}{c}
\text{O} \\
\text{OC}_2\text{H}_4 \text{O} \text{C}_3\text{H}_6 \text{O} \text{C} \\
\text{OC}_2\text{H}_4 \text{O} \text{C}_3\text{H}_6 \text{O} \text{C} \\
a \\
\text{CO} \text{O} \text{R}^2
\end{array} \right] (I)
\]

wherein
R¹ and R² independently of one another are H₃C-(OC₂H₄)n-(OC₃H₆)m wherein the -(OC₂H₄)
groups and the -(OC₃H₆) groups are arranged blockwise and the block consisting of the -(OC₃H₆) groups is bound to a COO group,

n is based on a molar average 45,
m is based on a molar average 5, and

a is based on a molar average a number of from 6 to 7

are especially preferred.

The groups -O-C₂H₄- in the structural units "X-(OC₂H₄)n-(OC₃H₆)m" or "H₂C-(OC₂H₄)n-(OC₃H₆)m" are of the formula -O-CH₂-CH₂-.

The groups -O-C₃H₆- in the structural units indexed with "a", in the structural units "X-(OC₂H₄)n-(OC₃H₆)m" or "H₂C-(OC₂H₄)n-(OC₃H₆)m" and in the structural units HO-(C₃H₆)m are of the formula -0-CH(CH₃)-CH₂- or -0-CH₂-CH(CH₃)₃, i.e. are of the formula

REM: COMPOSITIONS

The active blend compositions may advantageously be used in laundry detergent and fabric care products and in particular in liquid laundry detergent and fabric care products. These laundry detergent and fabric care products may comprise one or more optional ingredients, e.g. they may comprise conventional ingredients commonly used in laundry detergent and fabric care products. Examples of optional ingredients include, but are not limited to builders, surfactants, bleaching agents, bleach active compounds, bleach activators, bleach catalysts, photobleaches, dye transfer inhibitors, color protection agents, anti-redeposition agents, dispersing agents, fabric softening and antistatic agents, fluorescent whitening agents, enzymes, enzyme stabilizing agents, foam regulators, defoamers, malodour reducers, preservatives, disinfecting agents, hydrotopes, fibre lubricants, anti-shrinkage agents, buffers, fragrances, processing aids, colorants, dyes, pigments, anti-corrosion agents, fillers, stabilizers and other conventional ingredients for laundry detergent and fabric care products.

The active blend compositions have an advantageous stability in alkaline environment, possess a beneficial solubility and advantageously are clearly soluble in alkaline compositions such as heavy duty washing liquids and also possess advantageous soil release properties. In laundry detergent or fabric care products they result in a beneficial washing performance, in particular
also after storage. Furthermore, they are storage stable at elevated temperature, i.e. they are clear solutions at elevated temperature also after a prolonged time of storage. In the context of a laundry liquid composition the active blend provides for:

- ease of addition & potentially shorter batch cycle time
- better perfume, preservation & enzyme performance due to addition at lower temperature
- improved polymer delivery.

The polyesters of component A) of the active blend compositions may advantageously be prepared by a process which comprises heating dimethyl terephthalate (DMT), 1,2-propylene glycol (PG), and X-(OC2H4)n-(OC3H6)m-OH, wherein X is C1-4 alkyl and preferably methyl, the -(OC2H4) groups and the -(OC3H6) groups are arranged blockwise and the block consisting of the -(OC3H6) groups is bound to the hydroxyl group -OH and n and m are as defined for the polyesters of component A) of the inventive compositions, with the addition of a catalyst, to temperatures of from 160 to 220 °C, firstly at atmospheric pressure, and then continuing the reaction under reduced pressure at temperatures of from 160 to 240 °C.

Reduced pressure preferably means a pressure of from 0.1 to 900 mbar and more preferably a pressure of from 0.5 to 500 mbar.

Preferably, the process for the preparation of the polyesters of component A) of the inventive compositions is characterized in that

a) dimethyl terephthalate, 1,2-propylene glycol, X-(OC2H4)n-(OC3H6)m-OH, wherein X is C1-4 alkyl and preferably methyl, and a catalyst are added to a reaction vessel, heated under inert gas, preferably nitrogen, to a temperature of from 160 °C to 220 °C to remove methanol and then pressure is reduced to below atmospheric pressure, preferably to a pressure of from 200 to 900 mbar and more preferably to a pressure of from 400 to 600 mbar for completion of the transesterification, and

b) in a second step the reaction is continued at a temperature of from 210 °C to 240 °C and at a pressure of from 0.1 to 10 mbar and preferably of from 0.5 to 5 mbar to form the polyester.

Sodium acetate (NaOAc) and tetraisopropyl orthotitanate (IPT) is preferably used as the catalyst system in the preparation of the polyesters of component A) of the inventive compositions.
The preparation of the polyesters of component A) of the active blend compositions is e.g. described in WO 2013/019658 A1.

5 Preferably, the one or more alcohols of component B) of the inventive compositions are selected from the group consisting of 1,2-propylene glycol, 1,3-propylene glycol and butyl glycol.

More preferably, the alcohol of component B) of the inventive compositions is 1,2-propylene glycol.

The active blend compositions preferably comprise
- of from 45 to 55 % by weight of the one or more polyesters of component A),
- of from 15 to 25 % by weight of the one or more alcohols of component B), and
- of from 24 to 40 % by weight of water of component C),
the amounts in each case being based on the total weight of the active blend.

The active blend may preferably comprise from 0 to 10 % by weight, and more preferably from 0 to 5 % by weight, of one or more additives, that may generally be used in detergent applications. Additives that may be used are e.g. sequestering agents, complexing agents, polymers different from the one or more polyesters of component A) of the inventive compositions, and surfactants.

Preferably, the active blend preferably comprises one or more additives (component D)), and in this case the amount of water of component C) preferably is of from 24 to 39.95 % by weight, the amounts in each case being based on the total weight of the active blend.

The one or more additives of component D) of the active blend are preferably selected from the group consisting of sequestering agents, complexing agents, polymers different from the one or more polyesters of component A) and surfactants.

Suitable sequestering agents e.g. are polyacrylic acid or acrylic acid / maleic acid copolymers (e.g. Sokalan CP 12S, BASF).

Suitable complexing agents e.g. are EDTA (ethylene diamine tetraacetate), diethylene triamine pentaacetate, nitrilotriacetic acid salts or iminodisuccinic acid salts.
Suitable polymers different from the one or more polyesters of component A) of the inventive compositions e.g. are dye transfer inhibitors such as e.g. vinyl pyrrolidone.

Suitable surfactants may be anionic surfactants such as lauryl sulfate, lauryl ether sulfate, alkane sulfonates, linear alkylbenzene sulfonates, methylester sulfonates, amine oxides or betaine surfactants.

Preferably, the one or more additives of component D) are present in the active blend compositions in an amount of up to 10 % by weight, and in this case the amount of water of component C) in the active blend compositions preferably is of from 24 to 39.95 % by weight, the amounts in each case being based on the total weight of the active blend.

More preferably, the one or more additives of component D) are present in the active blend compositions in an amount of from 0.1 to 10 % by weight, and in this case the amount of water of component C) in the active blend compositions preferably is of from 24 to 39.9 % by weight, the amounts in each case being based on the total weight of the active blend.

Even more preferably, the one or more additives of component D) are present in the active blend compositions in an amount of from 0.5 to 5 % by weight, and in this case the amount of water of component C) in the active blend compositions preferably is of from 24 to 39.5 % by weight, the amounts in each case being based on the total weight of the active blend compositions.

In a further preferred embodiment the active blend consists of the one or more polyesters of component A), the one or more alcohols of component B), and water of component C).

Preferably, the viscosity of the active blend compositions, measured at 25 °C, is of from 200 to 5 000 mPa-s

More preferably, the viscosity of the active blend compositions, measured at 25 °C, is of from 500 to 2 000 mPa-s

The viscosities are measured on the active blend compositions themselves using a Brookfield-viscosimeter, model DV II and the spindles of the set of spindles RV at 20 revolutions per minute and 25°C. Spindle No. 1 is used for viscosities of up to 500 mPa*s, spindle No. 2 for viscosities of up to 1 000 mPa*s, spindle No. 3 for viscosities of up to 5 000 mPa*s, spindle No. 4 for viscosities of up to 10 000 mPa*s, spindle No. 5 for viscosities of up to 20 000 mPa*s,
spindle No. 6 for viscosities of up to 50 000 mPa*s and spindle No. 7 for viscosities of up to 200 000 mPa*s.

In a second aspect there is provided a method for making a laundry liquid composition comprising adding an active blend as described above to a composition comprising cleansing surfactant selected from anionic surfactants and nonionic surfactants. Preferably, the method comprises adding the active blend as described herein and mixing before adding perfume, fragrance or preservative. Preferably, the temperature of the mixture of surfactants to which the active blend is added is not more than 50C and preferably from 10 to 40C.

Preferred preservatives include BIT (1,2-Benzisothiazolin-3-one); MIT (Methylisothiazolinone); Phenoxylethanol, IPBC and mixtures thereof.

Preferred preservative systems include BIT (1,2-Benzisothiazolin-3-one), BIT (1,2-

Benzoisothiazolin-3-one) and MIT (Methylisothiazolinone); and Phenoxylethanol and BIT;
Phenoxylethanol and IPBC.

In a third aspect there is provided a laundry liquid composition obtainable by a process according to the second aspect.

The examples below are intended to illustrate the invention in detail without, however, limiting it thereto. Unless explicitly stated otherwise, all percentages given are percentages by weight (% by wt. or wt.-%).

25 General procedure for the preparation of the polyesters

The polyester synthesis is carried out by the reaction of dimethyl terephthalate (DMT), 1,2-
propylene glycol (PG), and methyl polyalkyleneglycol using sodium acetate (NaOAc) and
tetraisopropyl orthotitanate (IPT) as the catalyst system. The synthesis is a two-step procedure.

The first step is a transesterification and the second step is a polycondensation.

Transesterification

Dimethyl terephthalate (DMT), 1,2-propylene glycol (PG), methyl polyalkyleneglycol, sodium
acetate (anhydrous) (NaOAc) and tetraisopropyl orthotitanate (IPT) are weighed into a reaction
vessel at room temperature.
For the melting process and homogenization, the mixture is heated up to 170 °C for 1 h and then up to 210 °C for a further 1 h sparged by a nitrogen stream. During the transesterification methanol is released from the reaction and is distilled out of the system (distillation temperature < 55 °C). After 2 h at 210 °C nitrogen is switched off and the pressure is reduced to 400 mbar over 3 h.

**Polvcondensation**

The mixture is heated up to 230 °C. At 230 °C the pressure is reduced to 1 mbar over 160 min. Once the polycondensation reaction has started, 1,2-propylene glycol is distilled out of the system. The mixture is stirred for 4 h at 230 °C and a pressure of 1 mbar. The reaction mixture is cooled down to 140 - 150 °C. Vacuum is released with nitrogen and the molten polymer is transferred into a glass bottle.

**Example I**

<table>
<thead>
<tr>
<th>Amount [g]</th>
<th>Amount [mol]</th>
<th>Raw Material [Abbreviation]</th>
</tr>
</thead>
<tbody>
<tr>
<td>101.95</td>
<td>0.53</td>
<td>DMT</td>
</tr>
<tr>
<td>84.0</td>
<td>1.104</td>
<td>PG</td>
</tr>
<tr>
<td>343.5</td>
<td>0.15</td>
<td>H₃C-(OC₂H₄)ₙ-(OC₃H₆)ₘ-OH</td>
</tr>
<tr>
<td>0.5</td>
<td>0.0061</td>
<td>NaOAc</td>
</tr>
<tr>
<td>0.2</td>
<td>0.0007</td>
<td>IPT</td>
</tr>
</tbody>
</table>

A polyester according to formula (I) is obtained wherein

R¹ and R² are H₃C-(OC₂H₄)ₙ-(OC₃H₆)ₘ wherein the -(OC₂H₄) groups and the -(OC₃H₆) groups are arranged blockwise and the block consisting of the -(OC₃H₆) groups is bound to a COO group,

n is based on a molar average 45,

m is based on a molar average 5, and

a is based on a molar average a number of from 6 to 7.
Example II

A polyester according to formula (I) is obtained wherein

<table>
<thead>
<tr>
<th>Amount [g]</th>
<th>Amount [mol]</th>
<th>Raw Material [Abbreviation]</th>
</tr>
</thead>
<tbody>
<tr>
<td>101.95</td>
<td>0.53</td>
<td>DMT</td>
</tr>
<tr>
<td>84.0</td>
<td>1.104</td>
<td>PG</td>
</tr>
<tr>
<td>317.4</td>
<td>0.15</td>
<td>H$_3$C-(OC$_2$H$_4$)$_n$-(OC$_3$H$_6$)$_m$-OH</td>
</tr>
<tr>
<td>0.5</td>
<td>0.0061</td>
<td>NaOAc</td>
</tr>
<tr>
<td>0.2</td>
<td>0.0007</td>
<td>IPT</td>
</tr>
</tbody>
</table>

R$^1$ and R$^2$ are H$_3$C-(OC$_2$H$_4$)$_n$-(OC$_3$H$_6$)$_m$ wherein the (OC$_2$H$_4$)$_n$ groups and the (OC$_3$H$_6$)$_m$ groups are arranged blockwise and the block consisting of the (OC$_3$H$_6$) groups is bound to a COO group,

n is based on a molar average 45,

m is based on a molar average 2, and

a is based on a molar average a number of from 6 to 7.

Stability tests

Solutions according to the compositions of the following table have been prepared by dissolving the polyester in the respective mixture of water and alcoholic solvent. The additive Sokalan CP 12S was dissolved in the final mixture. The mixtures were investigated with respect to their stability in a storage cabinet (+ = clear solution, o = turbidity, - = pronounced turbidity / precipitation). Freshly prepared samples are clear solutions.

The polyester of Example I (Ex. I) has been used for the stability tests.

Sokalan CP 12S (acrylic acid / maleic acid copolymer, BASF) has been used as the additive.
From the table it can be seen that solutions of the soil release polyesters in water (Examples 1 - 4) become turbid at 45°C already after two weeks of storage. Inventive compositions comprising 1,2-propylene glycol or butyl glycol are still clear after 4 weeks of storage at 45°C.

5 EXAMPLE III

Process for making laundry liquid composition.

Optical brightener, salt, acids, alkalis & hydrotrope are added to water followed by the surfactants in order: nonionic, LAS then the fatty acid. SLES is then injected in line using a mill. Once SLES is dispersed Texcare SRN UL 50, ex. Clariant (the polyester active blend) is then added. In a separate vessel a pre-mix of dyes & water is made which is then added to the main mixer. After this point the minors are added (preservation & perfume & enzymes if applicable).
<table>
<thead>
<tr>
<th>Example</th>
<th>Polyester of Ex. I [wt.-%]</th>
<th>Water [wt.-%]</th>
<th>1,2-Propylene glycol [wt.-%]</th>
<th>Butyl glycol [wt.-%]</th>
<th>Glycerol [wt.-%]</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>35</td>
<td>65</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>35</td>
<td>64</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>60</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>50</td>
<td>50</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>45</td>
<td>44</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>45</td>
<td>39</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>45</td>
<td>34</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>45</td>
<td>24</td>
<td>30</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>45</td>
<td>44</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>45</td>
<td>39</td>
<td></td>
<td>15</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>45</td>
<td>34</td>
<td></td>
<td></td>
<td>20</td>
</tr>
<tr>
<td>12</td>
<td>50</td>
<td>40</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>50</td>
<td>40</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>50</td>
<td>39</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>50</td>
<td>39</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>55</td>
<td>34</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>55</td>
<td>34</td>
<td></td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>50</td>
<td>30</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>50</td>
<td>35</td>
<td>15</td>
<td></td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>50</td>
<td>29</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>50</td>
<td>25</td>
<td>25</td>
<td></td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>50</td>
<td>30</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>40</td>
<td>50</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>45</td>
<td>45</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>40</td>
<td>49</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>45</td>
<td>44</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>50</td>
<td>30</td>
<td>20</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>50</td>
<td>30</td>
<td></td>
<td>20</td>
<td></td>
</tr>
<tr>
<td>Example</td>
<td>Additive [wt.-%]</td>
<td>clarity</td>
<td>clarity</td>
<td>Viscosity at 25 °C [mPa-s]</td>
<td></td>
</tr>
<tr>
<td>---------</td>
<td>-----------------</td>
<td>---------</td>
<td>---------</td>
<td>--------------------------</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>at 45 °C after 2 weeks</td>
<td>at 45 °C after 4 weeks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>250</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td>260</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>850</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>3300</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>1</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>1</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>1</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>17</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td></td>
<td></td>
</tr>
<tr>
<td>18</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>1170</td>
<td></td>
</tr>
<tr>
<td>19</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>1260</td>
<td></td>
</tr>
<tr>
<td>20</td>
<td>1</td>
<td>+</td>
<td>+</td>
<td>1170</td>
<td></td>
</tr>
<tr>
<td>21</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>870</td>
<td></td>
</tr>
<tr>
<td>22</td>
<td>+</td>
<td>+</td>
<td>+</td>
<td>285</td>
<td></td>
</tr>
<tr>
<td>23</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>24</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>25</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>26</td>
<td>1</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>27</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
<tr>
<td>28</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
CLAIMS

1. An alkaline laundry liquid composition comprising at least 1% wt. of the composition triethanolamine, at least 5% wt. of the composition non-soap surfactant and at least 0.5% wt. of the composition of a polyester, characterized in that the polyester is provided as an active blend comprising:

A) from 45 to 55 % by weight of the active blend one or more polyesters according to the following formula (I)

\[
\begin{align*}
R^1 & \quad -O-C\left[\begin{array}{c}
C & (OC_2H_4)_{n-1} & (OC_3H_6)_m & C \end{array}\right]_a \quad -O-C\quad R^2 \\
& \quad (I)
\end{align*}
\]

wherein

\[R^1 \text{ and } R^2 \text{ independently of one another are } X-(OC_2H_4)n-(OC_3H_6)_m \text{ wherein } X \text{ is C}_1-4 \text{ alkyl and preferably methyl, the } -(OC_2H_4) \text{ groups and the } -(OC_3H_6) \text{ groups are arranged blockwise and the block consisting of the } -(OC_3H_6) \text{ groups is bound to a COOH group or are } HO-(C_3H_6)_a, \text{ and preferably are independently of one another } X-(OC_2H_4)n-(OC_3H_6)_m.\]

\[n \text{ is based on a molar average a number of from 12 to 120 and preferably of from 40 to 50,}\]

\[m \text{ is based on a molar average a number of from 1 to 10 and preferably of from 1 to 7, and}\]

\[a \text{ is based on a molar average a number of from 4 to 9 and}\]

B) from 10 to 30 % by weight of the active blend one or more alcohols selected from the group consisting of ethylene glycol, 1,2-propylene glycol, 1,3-propylene glycol, 1,2-butylene glycol, 1,3-butylene glycol, 1,4-butylene glycol and butyl glycol and

C) from 24 to 42 % by weight of the active blend water.

2. Composition according to claim 1, characterized in that in the one or more polyesters of component A)
R¹ and R² independently of one another are H₃C-(OC₂H₄)n-(OC₃H₆)m wherein the -(OC₂H₄) groups and the -(OC₃H₆) groups are arranged blockwise and the block consisting of the -(OC₃H₆) groups is bound to a COO group, and preferably are independently of one another H₃C-(OC₂H₄)ₙ-(OC₃H₆)ₘ, wherein the -(OC₃H₆)ₘ is based on a molar average a number of from 40 to 50, n is based on a molar average a number of from 1 to 7, and m is based on a molar average a number of from 4 to 9.

3. Composition according to claim 1 or 2, characterized in that in the one or more polyesters of component A) a based on a molar average is a number of from 5 to 8.

4. Composition according to claim 3, characterized in that in the one or more polyesters of component A) a based on a molar average is a number of from 6 to 7.

5. Composition according to one or more of claims 1 to 4, characterized in that in the one or more polyesters of component A) m based on a molar average is a number of from 2 to 5.

6. Composition according to one or more of claims 1 to 5, characterized in that in the one or more polyesters of component A) n based on a molar average is a number of from 43 to 47.

7. Composition according to claim 6, characterized in that in the one or more polyesters of component A) n based on a molar average is a number of from 44 to 46.

8. Composition according to claim 7, characterized in that in the one or more polyesters of component A) n based on a molar average is 45.

9. Composition according to one or more of claims 1 to 3 and 5 to 7, characterized in that in the one or more polyesters of component A) R¹ and R² independently of one another are H₃C-(OC₂H₄)n-(OC₃H₆)m wherein the -(OC₂H₄) groups and the -(OC₃H₆) groups are arranged blockwise and the block consisting of the -(OC₃H₆) groups is bound to a COO group, n is based on a molar average a number of from 44 to 46,
m is based on a molar average 2, and
a is based on a molar average a number of from 5 to 8.

10. Composition according to claim 9, characterized in that in the one or more polyesters of component A) n based on a molar average is 45, and a based on a molar average is a number of from 6 to 7.

11. Composition according to one or more of claims 1 to 3 and 5 to 7, characterized in that in the one or more polyesters of component A) R\textsuperscript{1} and R\textsuperscript{2} independently of one another are H\textsubscript{2}C-(OC\textsubscript{2}H\textsubscript{4})\textsubscript{n}-(OC\textsubscript{3}H\textsubscript{6})\textsubscript{m} wherein the -(OC\textsubscript{2}H\textsubscript{4}) groups and the -(OC\textsubscript{3}H\textsubscript{6}) groups are arranged blockwise and the block consisting of the -(OC\textsubscript{3}H\textsubscript{6}) groups is bound to a COO group, n is based on a molar average a number of from 44 to 46, m is based on a molar average 5, and a is based on a molar average a number of from 5 to 8.

12. Composition according to claim 11, characterized in that in the one or more polyesters of component A) n based on a molar average is 45, and a based on a molar average is a number of from 6 to 7.

13. Composition according to one or more of claims 1 to 12, characterized in that the one or more alcohols of component B) are selected from the group consisting of 1,2-propylene glycol, 1,3-propylene glycol and butyl glycol.

14. Composition according to claim 13, characterized in that the alcohol of component B) is 1,2-propylene glycol.

15. Composition according to one or more of claims 1 to 14, characterized in that it comprises of from 45 to 55 % by weight of the active blend of the one or more polyesters of component A), of from 15 to 25 % by weight of the active blend of the one or more alcohols of component B), and of from 24 to 40 % by weight of the active blend water of component C).
16. Composition according to one or more of claims 1 to 15, characterized in that it comprises one or more additives (component D), and in this case the amount of water preferably is of from 24 to 39.95 % by weight of the active blend.

17. Composition according to claim 16, characterized in that the one or more additives of component D) are selected from the group consisting of sequestering agents, complexing agents, polymers different from the one or more polyesters of component A) and surfactants.

18. Composition according to claim 16 or 17, characterized in that the one or more additives of component D) are present in the composition in an amount of up to 10 % by weight of the active blend, and in this case the amount of water preferably is of from 24 to 39.95 % by weight of the active blend.

19. Composition according to one or more of claims 16 to 18, characterized in that the one or more additives of component D) are present in the composition in an amount of from 0.1 to 10 % by weight, and in this case the amount of water preferably is of from 24 to 39.9 % by weight, the amounts in each case being based on the total weight of the active blend.

20. Composition according to one or more of claims 16 to 19, characterized in that the one or more additives of component D) are present in the composition in an amount of from 0.5 to 5 % by weight, and in this case the amount of water preferably is of from 24 to 39.5 % by weight, the amounts in each case being based on the total weight of the active blend.

21. Composition according to one or more of claims 1 to 15, characterized in that it consists of the one or more polyesters of component A), the one or more alcohols of component B), and water.

22. Composition according to one or more of claims 1 to 21, characterized in that its viscosity of the active blend measured at 25 °C is of from 200 to 5 000 mPa-s.

23. Composition according to claim 22, characterized in that its viscosity of the active blend measured at 25 °C is of from 500 to 2 000 mPa-s.
24. Process for making a laundry liquid compositions comprising adding an active blend as described above to a composition comprising cleansing surfactant selected from anionic surfactants and nonionic surfactants.

25. Process according to claim 24 wherein the method comprises adding the active blend as described herein and mixing before adding perfume, fragrance or preservative.

26. Process according to claim 24 or 25 wherein the temperature of the mixture of surfactants to which the active blend is added is not more than 50°C and preferably from 10 to 40°C.
INTERNATIONAL SEARCH REPORT

PCT/EP2015/065136

A. CLASSIFICATION OF SUBJECT MATTER


ADD.

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

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

C11D C08G

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

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

EPO-Internal, WPI Data

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category* Citation of document, with indication, where appropriate, of the relevant passages Relevant to claim No.

X wo 2014/019903 AI (UNILEVER PLC [GB]; UNILEVER NV [NL]; C0N0PC0 INC DBA UNILEVER [US]) 6 February 2014 (2014-02-06) page 3, line 11 - page 4, line 13 examples claims 1-26

X wo 2014/019658 AI (CLARIANT INT LTD [CH]) 6 February 2014 (2014-02-06) cited in the application on page 2, line 2 - page 3, line 13 examples claims --/--

Further documents are listed in the continuation of Box C. See patent family annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"O" document referring to an oral disclosure, use, exhibition or other means

"P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance: the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

"Z" document member of the same patent family

Date of the actual completion of the international search

31 August 2015

Date of mailing of the international search report

09/09/2015

Name and mailing address of the ISA*

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-3170) 340-2040,
Fax: (+31-3170) 340-3016

Authorized officer

Bertran Nadal, Josep

Form PCT/ISA/210 (second sheet) (April 2005)
<table>
<thead>
<tr>
<th>Category</th>
<th>Citation of document, with indication, where appropriate, of the relevant passages</th>
<th>Relevant to claim No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>X</td>
<td>EP 2 692 842 AI (UNILEVER PLC [GB]; UNILEVER NV [NL]) 5 February 2014 (2014-02-05) paragraphs [0009], [0010] examples 3-5</td>
<td>1-26</td>
</tr>
<tr>
<td>Patent document cited in search report</td>
<td>Publication date</td>
<td>Patent family member(s)</td>
</tr>
<tr>
<td>----------------------------------------</td>
<td>------------------</td>
<td>------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CN 104508000 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2015210961 A1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 2014019903 A1</td>
</tr>
<tr>
<td>WO 2014019658 A1</td>
<td>06-02-2014</td>
<td>CN 104684961 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>JP 2015523450 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>US 2015166938 A1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 2014019658 A1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>AU 2013298898 A1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>CN 104508104 A</td>
</tr>
<tr>
<td></td>
<td></td>
<td>EP 2692842 A1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>PH 12015500129 A1</td>
</tr>
<tr>
<td></td>
<td></td>
<td>WO 2014019792 A1</td>
</tr>
</tbody>
</table>