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(71) Applicants:
• **Henkel AG & Co. KGaA**
40589 Düsseldorf (DE)
• **SASOL Germany GmbH**
20537 Hamburg (DE)

(72) Inventors:
• **Janssen, Frank**
51103 Köln (DE)
• **Matulla, David**
40723 Hilden (DE)
• **Kapitza, Dorothea**
40595 Düsseldorf (DE)

- **Schneider, Susanne**
40599 Düsseldorf (DE)
- **Scheffers, Birgit**
40593 Düsseldorf (DE)
- **Seebauer, Beate**
40764 Langenfeld (DE)
- **Maassen, Simon**
41061 Mönchengladbach (DE)
- **Job, Mareile**
51375 Leverkusen (DE)
- **von Kathen, Anja**
42287 Wuppertal (DE)
- **Falenski, Laura**
41466 Neuss (DE)
- **Koch, Herbert**
46348 Raesfeld (DE)
- **Fischer, Ulrike**
Lake Charles,, LA 70601 (US)
- **Schoenkaes, Udo**
45721 Haltern am See (DE)
- **Kohnz, Harald**
46149 Oberhausen (DE)

(54) **COLOUR PROTECTION DETERGENTS**

(57) The present invention improves dye transfer inhibition in the washing of textiles by the use of suitable polyether polyesters.

EP 3 680 317 A1

Description

[0001] The present invention relates to the use of certain polyether polyesters as dye transfer-inhibiting active ingredients in the washing of textiles and to detergents that contain such compounds.

[0002] In addition to the constituents essential for the washing process such as surfactants and builders, detergents generally contain further ingredients which may be grouped together under the heading of washing auxiliaries and thus include various groups of active ingredients such as foam regulators, graying inhibitors, bleaching agents, bleaching activators and enzymes. Such auxiliary substances also include substances which are intended to prevent dyed textiles from having a modified colour appearance after washing. This change in colour appearance of washed, i.e. clean, textiles may be due, on the one hand, to proportions of the dye being removed from the textile by the washing process ("fading"), and, on the other hand, to dyes dissolved out from differently coloured textiles being deposited onto the textile ("discolouration"). Change of the discolouration kind may also affect undyed items if these are washed together with coloured items. In order to avoid these undesired side-effects when removing dirt from textiles by treatment with conventionally surfactant-containing aqueous systems, detergents, especially when they are intended as "colour" detergents for washing coloured textiles, contain active ingredients which are intended to prevent the dissolution of dyes from the textile or at least the deposition of dissolved-out dyes present in the washing liquor onto textiles. Many of the polymers conventionally used have such a high affinity for dyes that they draw them to a greater extent from the dyed fiber, resulting in greater colour losses from the washed textiles.

[0003] Polycondensation products of 20 - 50 mole % dicarboxylic acid, 10.1 mole % polyol with at least 3 OH-groups, 10.1 - 50 mole % alkylene oxide addition product of C₁₋₆-alcohol and 0.1 - 30 mole % diol are known from the international patent application WO 02/18474 A1. Such oligoesters are said to be useful in laundry detergents, hair treatment compositions and hard surface cleaning compositions, by improving the cleaning performance of such compositions.

[0004] It has surprisingly now been found that certain polyether polyesters give rise to unexpectedly high dye transfer inhibition if they are used in detergents.

[0005] The present invention, accordingly, provides the use of polyether polyesters obtainable by reacting, preferably by polycondensation, of

(A) 20 to 50 mole % of one or more dicarboxylic compounds,

(B) 10.1 to 29.9 mole % of one or more polyol compound with at least 3 OH-groups,

(C) 10.1 to 50 mole % of one or more water-soluble alkylene oxide addition products of one or more C₂₋ to C₄-alkylene oxide to a C₁₋ to C₆-alcohol in a molar ratio of 4 to 100 mole alkylene oxide, to 1 mole of alcohol, and

(D) 0 to 30 mole % of one or more diol compounds

for avoiding the transfer of textile dyes from dyed textiles onto undyed or differently coloured textiles

when they are jointly washed in aqueous solutions, in particular surfactant-containing aqueous solutions.

[0006] The above information in mole % is taken as definitive and respectively, independent from one another and take reference on the sum of the components (A) through (D). The oligoester is made by using essentially no further components.

[0007] The preventive action against the staining of white or also differently coloured textiles by dyes washed out of the textiles is particularly pronounced when the textile is made of or comprises cotton; nevertheless, there is also an effect on synthetic fibres like polyester, polyacrylate, elastane, polyamide and mixtures thereof, especially seen at increasing concentrations of the polymers mentioned above. It is conceivable that the polyether polyesters attach themselves to the textiles during washing and have a repellent action on the dye molecules present in the liquor.

[0008] Preferred polyether polyesters are made by polycondensation, of

(A) 30 to 40 mole %, of one or more dicarboxylic compounds,

(B) 15 to 29 mole % of one or more polyol compound with at least 3 OH-groups,

(C) 15 to 45 mole %, of one or more water-soluble alkylene oxide addition products of one or more C₂₋ to C₄-alkylene oxide to a C₁₋ to C₆-alcohol in a molar ratio of 4 to 30 moles, alkylene oxide, to one mole of alcohol and/or

(D) 0,1 to 30 mole %, of one or more diol compounds.

[0009] The synthesis of such polyether polyesters can be performed by esterification or transesterification. As a dicarboxyl compound (A), aliphatic and/ or aromatic dicarboxylic acids or their esters can be used. The dicarboxylic acid compounds preferably have 3 to 40 carbon atom, with reference to the dicarboxylic or dicarboxylic group. Aromatic dicarboxylic compounds, according to the present invention, in particular, can be terephthalic acid, isophthalic acid, phthalic acid, its mono- and diesters with C₁₋ to C_s-alcohol, such as, for example, dimethylterephthalate, whereby also mixtures of these components are possible. Examples for aliphatic acid compounds are malonic acid, succinic acid, maleic acid, glutaric acid, adipic acid, pimelic acid, suberic acid, azelaic acid and sebacic acid and their alkyl esters.

Preferably terephthalic acid, isophthalic acid and phthalic acid, as well as their dimethyl-, diethyl-, dipropyl- and dibutylesters are used.

[0010] The polyol compound (B) preferably has 3 to 12 carbon atoms. As examples for the polyol compound (B) with at least 3 OH-groups, the following are proposed: pentanerythritol, trimethylolethane, trimethylolpropane, 1,2,3-hexanetriol, sorbite, mannite, mono-, di- and triglycerol, 1,2,3-butanetriol. The use of glycerol is preferred.

[0011] Examples for alkylene oxide addition products (C) are addition products of ethylene oxide, propylene oxide, butylene oxide or their mixtures to aliphatic C1 to C6-alcohol, such as methanol, ethanol, propanol or butanol. Preferred are addition products of ethylene oxide to methanol.

[0012] As the diol compound (D), according to the present invention, ethylene glycol, 1,2- or 1,3 propylene glycol, neopentylglycol, as well as their dimers, trimers, can preferably be used. The diol compound (D) preferably has 2 to 20 carbon atoms. Essentially, also mixtures of different diols are possible. Preferred is the use of ethylene glycol and/or propylene glycol.

[0013] The synthesis of such polyether polyester may take place in the form of direct reaction of all monomer components in one step, so that statistic polymers are produced. A different mode of manufacture is a multi-step synthesis, for example of the type that a tire condensation of different components takes place.

[0014] Essentially, with the synthesis, temperatures of approximately 80 to 350° C and pressures of normal pressure to smaller than 1 bar are used. Preferably, the condensation is performed in the temperature range of 150 to 280° C in the presence of common polycondensation- and esterification catalysts. In this manner, the average weight mole masses of the produced polymers can be achieved. These preferably lie between 2000 and 5000 g/mol.

[0015] Catalyst compounds described in the literature are suitable. If the free dicarboxylic acid or the anhydrides are used as the dicarboxylic acid compound (A), p-toluene sulfuric acid is the preferred catalyst. For dicarboxylic acid dialkylesters as the dicarboxylic acid compound (A), the common transesterification catalysts may be used, such as, for example, zinc acetate, mixtures of calcium acetate and antimony oxide, stannates or tetra alkoxy-titanates, such as titanetra-isobutanolate, or tetra-isopropylate.

[0016] The condensation can be performed in the presence of anti-oxidants, for example, substituted phenols, such as for example, 2,5 di-tertiary butylphenol, 2-methylcyclohexyl-4,6-dimethylphenol, phosphoric acid or other antioxidants commonly used for this purpose. These compounds prevent oxidative coloration of the polyether polyester during condensation.

[0017] A preferred mode of performing the present invention is by employing a detergent that contains 0.001 wt.% to 10 wt.%, in particular 0.05 wt.% to 5 wt.%, of dye transfer-inhibiting polyether polyester as defined above. A more preferred mode of performing the present invention is by employing a detergent that additionally contains an enzyme, as defined below.

[0018] The polyether polyesters make a contribution to both of the above-mentioned aspects of colour consistency, that is they reduce both discolouration and fading, although the staining prevention effect, in particular when washing white textiles, is most pronounced. The present invention accordingly also provides the use of the polyether polyesters defined above for avoiding the modification of the colour appearance of textiles when they are washed in aqueous solutions, in particular surfactant-containing aqueous solutions. A modification of the colour appearance should not be taken to mean the difference between the dirty and the clean textile, but instead the difference between the clean textile in each case before and after the washing operation.

[0019] The present invention also provides a method for washing dyed textiles in surfactant-containing aqueous solutions, wherein dyed textiles in need of cleaning are contacted with a surfactant-containing aqueous solution which contains a polyether polyester as herein defined. In such a method, it is possible also to wash white or undyed textiles together with the dyed textile, without the white or undyed textile being unduly stained. Preferably the method is performed at temperatures in the range of from 10 °C to 100 °C, especially from 20 °C to 60 °C. The concentration of polyester as herein defined in the aqueous surfactant-containing wash liquor preferably is in the range of from 0.1 ppm to 1 wt.%, especially from 1 ppm to 1000 ppm.

[0020] The benefits of polyether polyesters defined above are most pronounced if the dye that is to be inhibited from fading or from getting transferred is or comprises indigo. Indigo is 2,2'-Bis(2,3-dihydro-3-oxoindolylidene); it is used mainly as a dye for cotton yarn, which is used for the production of denim cloth for blue jeans. Small amounts of indigo are used for dyeing wool and silk. Among the preferred embodiments of the uses and processes according to the invention are those that deal with textiles that are dyed with indigo.

[0021] A detergent may, in addition to the polyether polyesters defined above, contain a known dye transfer inhibitor, preferably in quantities of 0.1 wt.% to 2 wt.%, in particular 0.2 wt.% to 1 wt.%, said inhibitor being in a preferred development of the invention a polymer of vinylpyrrolidone, vinylimidazole, vinylpyridine N-oxide or a copolymer thereof. Usable compounds are not only the polyvinylpyrrolidones with a molecular weight of for example 15,000 g/mol to 50,000 g/mol but also the polyvinylpyrrolidones with a molecular weight of above 1,000,000 g/mol, in particular of 1,500,000 g/mol to 4,000,000 g/mol, N-vinylimidazole/N-vinylpyrrolidone copolymers, polyvinyl-oxazolidones, copolymers based on vinyl monomer and carboxamides. It is, however, also possible to use enzymatic systems comprising a peroxidase and

hydrogen peroxide or a substance which releases hydrogen peroxide in water. The addition of a mediator compound for the peroxidase, for example an acetosyringone or a phenothiazine or phenoxazine is preferred in this case, it also additionally being possible to use the above-stated polymeric dye transfer inhibitor active ingredients. For use in detergents according to the invention, polyvinylpyrrolidone preferably has an average molar mass in the range from 10,000 g/mol to 60,000 g/mol, in particular in the range from 25,000 g/mol to 50,000 g/mol. Preferred copolymers are those prepared from vinylpyrrolidone and vinylimidazole in the molar ratio 5:1 to 1:1 having an average molar mass in the range from 5,000 g/mol to 50,000 g/mol, in particular 10,000 g/mol to 20,000 g/mol.

[0022] The detergents, which may in particular assume the form of pulverulent solids, post-compacted particles, homogeneous solutions or suspensions, may in principle, apart from the active ingredient used according to the invention, contain any constituents which are known and conventional in such products. The detergents may in particular contain builder substances, surfactants, bleaching agents based on organic and/or inorganic peroxy compounds, bleaching activators, water-miscible organic solvents, enzymes, sequestering agents, electrolytes, pH regulators and further auxiliary materials, such as optical brighteners, greying inhibitors, foam regulators together with colourants and fragrances.

[0023] The detergents may contain one surfactant or two or more surfactants, it being possible in particular to consider not only anionic surfactants, nonionic surfactants and mixtures thereof, but also cationic, zwitterionic and amphoteric surfactants.

[0024] Suitable nonionic surfactants are in particular alkylglycosides and ethoxylation and/or propoxylation products of alkylglycosides or linear or branched alcohols in each case having 12 to 18 C atoms in the alkyl moiety and 3 to 20, preferably 4 to 10, alkyl ether groups. Corresponding ethoxylation and/or propoxylation products of N-alkylamino, vicinal diols, fatty acid esters and fatty acid amides, which correspond with regard to the alkyl moiety to the stated long-chain alcohol derivatives, and of alkylphenols having 5 to 12 C atoms in the alkyl residue may furthermore be used.

[0025] Preferably used nonionic surfactants are alkoxyated, advantageously ethoxylated, in particular primary alcohols with preferably 8 to 18 C atoms and on average 1 to 12 mol of ethylene oxide (EO) per mol of alcohol, in which the alcohol residue may be linear or preferably methyl-branched in position 2 or may contain linear and methyl-branched residues in the mixture, as are conventionally present in oxo alcohol residues. In particular, however, alcohol ethoxylates with linear residues prepared from alcohols of natural origin with 12 to 18 C atoms, for example from coconut, palm, tallow fat or oleyl alcohol, and on average 2 to 8 EO per mol of alcohol are preferred. Preferred ethoxylated alcohols include, for example, C₁₂-C₁₄ alcohols with 3 EO or 4 EO, C₉-C₁₁ alcohols with 7 EO, C₁₃-C₁₅ alcohols with 3 EO, 5 EO, 7 EO or 8 EO, C₁₂-C₁₈ alcohols with 3 EO, 5 EO or 7 EO and mixtures of these, such as mixtures of C₁₂-C₁₄ alcohol with 3 EO and C₁₂-C₁₈ alcohol with 7 EO. The stated degrees of ethoxylation are statistical averages which, for a specific product, may be an integer or a fractional number. Preferred alcohol ethoxylates have a narrow homologue distribution (narrow range ethoxylates, NRE). In addition to these nonionic surfactants, fatty alcohols with more than 12 EO may also be used. Examples of these are (tallow) fatty alcohols with 14 EO, 16 EO, 20 EO, 25 EO, 30 EO or 40 EO. In particular in products for use in machine washing, extremely low-foam compounds are conventionally used. These preferably include C₁₂-C₁₈ alkylpolyethylene glycol/polypropylene glycol ethers in each case having up to 8 mol of ethylene oxide and propylene oxide units per molecule. It is, however, also possible to use other nonionic surfactants which are known to be low-foaming, such as for example C₁₂-C₁₃-alkyl polyethylene glycol/polybutylene glycol ethers with in each case up to 8 mol ethylene oxide and butylene oxide units per molecule and end group-terminated alkylpolyalkylene glycol mixed ethers. Alkoxyated alcohols containing hydroxyl groups, or "hydroxy mixed ethers", are also particularly preferred. Alkylglycosides of the general formula RO(G)_x, in which R means a primary linear or methyl-branched aliphatic residue, in particular methyl-branched in position 2, with 8 to 22, preferably 12 to 18 C atoms, and G denotes a glucose unit with 5 or 6 C atoms, preferably glucose, may also be used as nonionic surfactants. The degree of oligomerization x, which indicates the distribution of monoglycosides and oligoglycosides, is any desired number and, being an analytically determined variable, may also assume fractional values between 1 and 10; x is preferably 1.2 to 1.4. Polyhydroxyfatty acid amides of the formulae (I) and (II) are likewise suitable, in which R¹ and R³ denote linear or branched alkyl or alkenyl residues with 7 to 12 carbon atoms, R² denotes hydrogen, an alkyl or hydroxyalkyl residue with 1 to 4 carbon atoms, R⁴ denotes a linear, branched or cyclic alkylene residue or an arylene residue with 2 to 8 carbon atoms, R⁵ denotes a linear, branched or cyclic alkyl residue or an aryl residue or an oxyalkyl residue with 1 to 8 carbon atoms, C₁-C₄ alkyl or phenyl residues being preferred, and [Z] denotes a linear or branched polyhydroxyalkyl residue with 3 to 10 carbon atoms, the alkyl chain of which is substituted with at least two hydroxyl groups, or alkoxyated, preferably ethoxylated or propoxylated, derivatives of this residue:



[0026] The polyhydroxyfatty acid amides, especially those of formula (II), may preferably be derived from reducing

sugars with 5 or 6 carbon atoms. [Z] is also preferably obtained by reductive amination of a sugar such as glucose, fructose, maltose, lactose, galactose, mannose or xylose. The N-alkoxy- or N-aryloxy-substituted compounds may then be converted into the desired polyhydroxyfatty acid amides by reaction with fatty acid methyl esters in the presence of an alkoxide as catalyst. A further class of preferably used nonionic surfactants, which are used either as sole nonionic surfactant or in combination with other nonionic surfactants, in particular together with alkoxyfatty alcohols and/or alkyl glycosides, are alkoxyfatty alcohols, preferably ethoxyfatty alcohols and propoxyfatty alcohols, preferably with 1 to 4 carbon atoms in the alkyl chain, in particular fatty acid methyl esters. Nonionic surfactants of the amine oxide type, for example N-coconut alkyl-N,N-dimethylamine oxide and N-tallow alcohol-N,N-dihydroxyethylamine oxide, and the fatty acid alkanolamide type may also be suitable. The quantity of these nonionic surfactants preferably amounts to no more than that of the ethoxyfatty alcohols, in particular no more than half the quantity thereof. "Gemini" surfactants may also be considered as further surfactants. These are generally taken to mean such compounds as have two hydrophilic groups per molecule. These groups are generally separated from one another by a "spacer". This spacer is generally a carbon chain which should be long enough for the hydrophilic groups to be sufficiently far apart that they can act mutually independently. Such surfactants are in general distinguished by an unusually low critical micelle concentration and the ability to bring about a great reduction in the surface tension of water. In exceptional cases, gemini surfactants include not only such "dimeric" surfactants, but also corresponding "trimeric" surfactants. Suitable gemini surfactants are, for example, sulfated hydroxy mixed ethers or dimer alcohol bis- and trimer alcohol tris-sulfates and -ether sulfates. End group-terminated dimeric and trimeric mixed ethers are in particular distinguished by their di- and multifunctionality. The stated end group-terminated surfactants accordingly exhibit good wetting characteristics and are low-foaming, such that they are in particular suitable for use in machine washing or cleaning processes. Gemini polyhydroxyfatty acid amides or poly-polyhydroxyfatty acid amides may, however, also be used.

[0027] Suitable anionic surfactants are in particular soaps and those which contain sulfate or sulfonate groups. Surfactants of the sulfonate type which may preferably be considered are C_9 - C_{13} alkyl benzene sulfonates, olefin sulfonates, i.e. mixtures of alkene and hydroxyalkane sulfonates and disulfonates, as are obtained, for example, from C_{12} - C_{18} monoolefins with a terminal or internal double bond by sulfonation with gaseous sulfur trioxide and subsequent alkaline or acidic hydrolysis of the sulfonation products. Alkane sulfonates which are obtained from C_{12} - C_{18} alkanes for example by sulfochlorination or sulfoxidation with subsequent hydrolysis or neutralization are also suitable. The esters of α -sulfofatty acids (ester sulfonates), for example the α -sulfofatty acid methyl esters of hydrogenated coconut, palm kernel or tallow fatty acids, which are produced by α -sulfonation of the methyl esters of fatty acids of vegetable and/or animal origin with 8 to 20 C atoms in the fatty acid molecule and subsequent neutralization to yield water-soluble mono salts, may also be considered suitable. The α -sulfofatty acid esters of hydrogenated coconut, palm, palm kernel or tallow fatty acids are here preferred, it also being possible for sulfonation products of unsaturated fatty acids, for example oleic acid, also to be present in small quantities, preferably in quantities of no more than approximately 2 to 3 wt.%. Preferred α -sulfofatty acid alkyl esters are in particular those which comprise an alkyl chain with no more than 4 C atoms in the ester group, for example methyl ester, ethyl ester, propyl ester and butyl ester. The methyl esters of α -sulfofatty acids (MES), and the saponified disalts thereof too, are particularly advantageously used. Further suitable anionic surfactants are sulfated fatty acid glycerol esters, which are mono-, di- and triesters and mixtures thereof, as are obtained during production by esterification by a monoglycerol with 1 to 3 mol of fatty acid or on transesterification of triglycerides with 0.3 to 2 mol of glycerol. Preferred alk(en)yl sulfates are the alkali metal and in particular sodium salts of sulfuric acid semi-esters of C_{12} - C_{18} fatty alcohols for example prepared from coconut fatty alcohol, tallow fatty alcohol, lauryl, myristyl, cetyl- or stearyl alcohol or C_{10} - C_{20} oxo alcohols and those semi-esters of secondary alcohols of this chain length. Alk(en)yl sulfates of the stated chain length which contain a synthetic linear alkyl residue produced on a petrochemical basis and which exhibit degradation behaviour similar to that of the appropriate compounds based on fatty chemical raw materials are also preferred. In particular, C_{12} - C_{16} alkyl sulfates and C_{12} - C_{15} alkyl sulfates and C_{14} - C_{15} alkyl sulfates are preferred because of their washing characteristics. The sulfuric acid monoesters of linear or branched C_7 - C_{21} alcohols ethoxylated with 1 to 6 mol of ethylene oxide are also suitable, such as 2-methyl-branched C_9 - C_{11} alcohols with on average 3.5 mol of ethylene oxide (EO) or C_{12} - C_{18} fatty alcohols with 1 to 4 EO. Preferred anionic surfactants also include the salts of alkylsulfosuccinic acid, which are also known as sulfosuccinates or sulfosuccinic acid esters, and are the monoesters and/or diesters of sulfosuccinic acid with alcohols, preferably fatty alcohols and in particular ethoxylated fatty alcohols. Preferred sulfosuccinates contain C_8 to C_{18} fatty alcohol residues or mixtures thereof. Particularly preferred sulfosuccinates contain a fatty alcohol residue which is derived from ethoxylated fatty alcohols, which are in themselves nonionic surfactants. Sulfosuccinates whose fatty alcohol residues are derived from ethoxylated fatty alcohols with a narrow homologue distribution are here particularly preferred. It is likewise also possible to use alk(en)ylsuccinic acid with preferably 8 to 18 carbon atoms in the alk(en)yl chain or the salts thereof. Further anionic surfactants which may be considered are fatty acid derivatives of amino acids, for example of N-methyltaurine (taurides) and/or of N-methylglycine (sarcosides). Sarcosides or sarcosinates are particularly preferred here and most especially sarcosinates of higher and optionally mono- or polyunsaturated fatty acids such as oleyl sarcosinate. Further anionic surfactants which may in particular be considered are soaps. Saturated fatty acid soaps are in particular suitable, such as the salts

of lauric acid, myristic acid, palmitic acid, stearic acid, hydrogenated erucic acid and behenic acid and in particular soap mixtures derived from natural fatty acids, for example coconut, palm kernel or tallow fatty acids. Known alkenylsuccinic acid salts may also be used together with these soaps or as substitutes for soaps.

[0028] The anionic surfactants, including the soaps, may be present in the form of the sodium, potassium or ammonium salts thereof and as soluble salts of organic bases, such as mono-, di- or triethanolamine. The anionic surfactants are preferably present in the form of the sodium or potassium salts thereof, in particular in the form of the sodium salts.

[0029] Surfactants are present in detergents according to the invention in amounts of preferably 5 wt.% to 50 wt.%, in particular of 8 wt.% to 30 wt.%.

[0030] A detergent according to the invention preferably contains at least one water-soluble and/or water-insoluble, organic and/or inorganic builder. The water-soluble organic builder substances include polycarboxylic acids, in particular citric acid and saccharic acids, monomeric and polymeric aminopolycarboxylic acids, in particular methylglycinediacetic acid, nitrilotriacetic acid and ethylenediaminetetraacetic acid and polyaspartic acid, polyphosphonic acids, in particular aminotris(methylenephosphonic acid), ethylenediaminetetrakis(methylenephosphonic acid) and 1-hydroxyethyl-1,1-di-phosphonic acid, polymeric hydroxy compounds such as dextrin and polymeric (poly)carboxylic acids, in particular polycarboxylates obtainable by oxidation of polysaccharides or dextrans, polymeric acrylic acids, methacrylic acids, maleic acids and copolymers thereof, which may also contain small proportions of polymerizable substances without carboxylic acid functionality incorporated therein by polymerization. The relative molecular mass of the homopolymers of unsaturated carboxylic acids is in general between 3,000 and 200,000, that of the copolymers between 2,000 and 200,000, preferably 30,000 to 120,000, in each case relative to free acid. One particularly preferred acrylic acid/maleic acid copolymer has a relative molecular mass of 30,000 to 100,000. Conventional commercial products are for example Sokalan® CP 5, CP 10 and PA 30 from BASF. Suitable, albeit less preferred, compounds of this class are copolymers of acrylic acid or methacrylic acid with vinyl ethers, such as vinyl methyl ethers, vinyl esters, ethylene, propylene and styrene, the acid fraction of which amounts to at least 50 wt.%. Terpolymers containing as monomers two unsaturated acids and/or the salts thereof and, as third monomer, vinyl alcohol and/or a esterified vinyl alcohol or a carbohydrate may also be used as water-soluble organic builder substances. The first acidic monomer or the salt thereof is derived from a monoethylenically unsaturated C₃-C₈-carboxylic acid and preferably from a C₃-C₄-monocarboxylic acid, in particular from (meth)acrylic acid. The second acidic monomer or the salt thereof may be a derivative of a C₄-C₈-dicarboxylic acid, maleic acid being particularly preferred, and/or a derivative of an allylsulfonic acid which is substituted in position 2 with an alkyl or aryl residue. Such polymers generally have a relative molecular mass of between 1,000 and 200,000. Further preferred copolymers are those which comprise acrolein and acrylic acid/acrylic acid salts or vinyl acetate as monomers. The organic builder substances may be used, in particular for producing liquid products, in the form of aqueous solutions, preferably in the form of 30 to 50 wt.% aqueous solutions. All the stated acids are generally used in the form of the water-soluble salts, in particular the alkali metal salts, thereof.

[0031] Such organic builder substances may, if desired, be present in quantities of up to 40 wt.%, in particular of up to 25 wt.% and preferably of 1 wt.% to 8 wt.%. Quantities close to the stated upper limit are preferably used in pasty or liquid, in particular water-containing, detergents according to the invention.

[0032] Water-soluble inorganic builder materials which may in particular be considered are alkali metal silicates, alkali metal carbonates and alkali metal phosphates, which may be present in the form of the alkaline, neutral or acidic sodium or potassium salts thereof. Examples of these are trisodium phosphate, tetrasodium diphosphate, disodium dihydrogen-diphosphate, pentasodium triphosphate, "sodium hexametaphosphate", oligomeric trisodium phosphate with degrees of oligomerization of 5 to 1000, in particular 5 to 50, and the corresponding potassium salts or mixtures of sodium and potassium salts. Water-insoluble, water-dispersible inorganic builder materials which are used are in particular crystalline or amorphous alkali metal aluminosilicates, in quantities of up to 50 wt.%, preferably of no more than 40 wt.% and, in liquid products, in particular from 1 wt.% to 5 wt.%. Preferred such materials are crystalline sodium aluminosilicates of detergent grade, in particular zeolite A, P and optionally X, alone or in mixtures, for example in the form of a co-crystallization product of zeolites A and X (Vegobond® AX, a commercial product of Condea Augusta S.p.A.). Quantities close to the stated upper limit are preferably used in solid, particulate products. Suitable aluminosilicates in particular comprise no particles with a grain size of above 30 μm and preferably consist to an extent of at least 80 wt.% of particles with a size below 10 μm. Their calcium binding capacity, which may be determined as stated in German patent DE 24 12 837, is generally in the range from 100 to 200 mg of CaO per gram.

[0033] Suitable substitutes or partial substitutes for the stated aluminosilicates are crystalline alkali metal silicates, which may be present alone or mixed with amorphous silicates. The alkali metal silicates usable as builders in the products according to the invention preferably have a molar ratio of alkali metal oxide to SiO₂ of below 0.95, in particular of 1:1.1 to 1:12 and may be in amorphous or crystalline form. Preferred alkali metal silicates are sodium silicates, in particular amorphous sodium silicates, with an Na₂O:SiO₂ molar ratio of 1:2 to 1:2.8. Those with an Na₂O:SiO₂ molar ratio of 1:1.9 to 1:2.8 may be produced in accordance with the method of European patent application EP 0 425 427. Preferably used crystalline silicates, which may be present alone or mixed with amorphous silicates, are crystalline phyllosilicates of the general formula Na₂Si_xO_{2x+1} · y H₂O, in which x, or "modulus", is a number from 1.9 to 22, in

particular 1.9 to 4 and y is a number from 0 to 33 and preferred values for x are 2, 3 or 4. Preferred crystalline phyllosilicates are those in which x in the stated general formula assumes the values 2 or 3.

[0034] In particular, both β - and δ -sodium disilicates ($\text{Na}_2\text{Si}_2\text{O}_5 \cdot y \text{H}_2\text{O}$) are preferred. Virtually anhydrous crystalline alkali metal silicates of the above-stated general formula in which x means a number from 1.9 to 2.1, which are produced from amorphous alkali metal silicates, may be used in detergents according to the invention. A crystalline sodium phyllosilicate with a modulus of 2 to 3, as may be produced from sand and soda, is used in a further preferred embodiment of detergents according to the invention. Crystalline layered silicates of the above-stated formula (I) are commercially available from Clariant GmbH under the trade name Na-SKS, for example Na-SKS-1 ($\text{Na}_2\text{Si}_{22}\text{O}_{45} \times \text{H}_2\text{O}$, kenyaite), Na-SKS-2 ($\text{Na}_2\text{Si}_{14}\text{O}_{29} \times \text{H}_2\text{O}$, magadiite), Na-SKS-3 ($\text{Na}_2\text{Si}_8\text{O}_{17} \times \text{H}_2\text{O}$) or Na-SKS-4 ($\text{Na}_2\text{Si}_4\text{O}_9 \times \text{H}_2\text{O}$, makatite). Suitable representatives of these are primarily Na-SKS-5 (α - $\text{Na}_2\text{Si}_2\text{O}_5$), Na-SKS-7 (β - $\text{Na}_2\text{Si}_2\text{O}_5$, natrosilite), Na-SKS-9 ($\text{NaHSi}_2\text{O}_5 \cdot 3\text{H}_2\text{O}$), Na-SKS-10 ($\text{NaHSi}_2\text{O}_5 \cdot 3\text{H}_2\text{O}$, kanemite), Na-SKS-11 (t - $\text{Na}_2\text{Si}_2\text{O}_5$) and Na-SKS-13 (NaHSi_2O_5), but in particular Na-SKS-6 (δ - $\text{Na}_2\text{Si}_2\text{O}_5$). In a preferred development of detergents according to the invention, a granular compound is used which is prepared from crystalline phyllosilicate and citrate, from crystalline phyllosilicate and above-stated (co)polymeric polycarboxylic acid, or from alkali metal silicate and alkali metal carbonate, as is commercially available for example under the name Nabion® 15.

[0035] Builder substances are preferably present in detergents according to the invention in quantities of up to 75 wt.%, in particular of 5 wt.% to 50 wt.%.

[0036] Peroxy compounds suitable for use in detergents according to the invention which may in particular be considered are organic peracids or peracid salts of organic acids, such as phthalimidopercaproic acid, perbenzoic acid or salts of diperdodecanedioic acid, hydrogen peroxide and inorganic salts which release hydrogen peroxide under washing conditions, which latter include perborate, percarbonate, persulfate and/or persulfate such as caroate. Where solid peroxy compounds are to be used, they may be used in the form of powders or granules, which may also in principle be encapsulated in known manner. If a product according to the invention contains peroxy compounds, these are preferably present in quantities of up to 50 wt.%, in particular of 5 wt.% to 30 wt.%. It may be appropriate to add relatively small quantities of known bleaching agent stabilizers, such as for example phosphonates, borates or metaborates and metasilicates and magnesium salts such as magnesium sulfate.

[0037] Bleaching activators which may be used are compounds which, under perhydrolysis conditions, yield aliphatic peroxycarboxylic acids with preferably 1 to 10 C atoms, in particular 2 to 4 C atoms, and/or optionally substituted perbenzoic acid. Suitable substances are those which bear O- and/or N-acyl groups having the stated number of C atoms and/or optionally substituted benzoyl groups. Preferred substances are repeatedly acylated alkylenediamines, in particular tetraacetylenediamine (TAED), acylated triazine derivatives, in particular 1,5-diacetyl-2,4-dioxohexahydro-1,3,5-triazine (DADHT), acylated glycolurils, in particular tetraacetyl glycoluril (TAGU), N-acylimides, in particular N-nonanoylsuccinimide (NOSI), acylated phenolsulfonates, in particular n-nonanoyl- or isononanoyloxybenzenesulfonate (n- or iso-NOBS), carboxylic anhydrides, in particular phthalic anhydride, acylated polyhydric alcohols, in particular triacetin, ethylene glycol diacetate, 2,5-diacetoxy-2,5-dihydrofuran and enol esters and acetylated sorbitol and mannitol, or the mixtures thereof (SORMAN), acylated sugar derivatives, in particular pentaacetyl glucose (PAG), pentaacetyl fructose, tetraacetyl xylose and octaacetyl lactose and acetylated, optionally N-alkylated glucamine and gluconolactone, and/or N-acylated lactams, for example N-benzoylcaprolactam. Such bleaching activators may be present, in particular in the presence of the above-stated hydrogen peroxide-releasing bleaching agents, in a conventional quantity range, preferably in quantities of 0.5 wt.% to 10 wt.%, in particular 1 wt.% to 8 wt.%, relative to the entire product, but are preferably entirely absent when percarboxylic acid is used as the sole bleaching agent.

[0038] In addition to or instead of the above listed conventional bleaching activators, sulfone imines and/or bleach-boosting transition metal salts or transition metal complexes may be present as bleach catalysts.

[0039] Enzymes usable in the products which may be considered are those from the class of amylases, proteases, lipases, cutinases, pullulanases, hemicellulases, cellulases, oxidases, laccases and peroxidases and mixtures thereof. Particularly suitable enzymatic active ingredients are those obtained from fungi or bacteria, such as *Bacillus subtilis*, *Bacillus licheniformis*, *Bacillus lentus*, *Streptomyces griseus*, *Humicola lanuginosa*, *Humicola insolens*, *Pseudomonas pseudoalcaligenes*, *Pseudomonas cepacia* or *Coprinus cinereus*. The enzymes may be adsorbed onto carrier substances and/or be embedded in encapsulating substances in order to protect them from premature inactivation. They are present in the washing or cleaning products according to the invention preferably in quantities of up to 5 wt.%, in particular of 0.2 wt.% to 4 wt.%. If the product according to the invention contains protease, it preferably exhibits a proteolytic activity in the range from approx. 100 PU/g to approx. 10,000 PU/g, in particular 300 PU/g to 8000 PU/g. If two or more enzymes are to be used in the product according to the invention, this may be achieved by incorporating the two or more separate enzymes or enzymes which are separately formulated in known manner or by two or more enzymes jointly formulated in a granular product.

[0040] Organic solvents other than water which may be used in the detergents according to the invention, in particular if these are in liquid or pasty form, include alcohols with 1 to 4 C atoms, in particular methanol, ethanol, isopropanol and tert.-butanol, diols with 2 to 4 C atoms, in particular ethylene glycol and propylene glycol, and mixtures thereof and the

ethers derivable from the stated classes of compounds. Such water-miscible solvents are preferably present in the products according to the invention in quantities of no more than 30 wt.%, in particular of 6 wt.% to 20 wt.%.

[0041] In order to establish a desired pH value which is not automatically obtained by mixing the remaining components, the detergents according to the invention may contain acids which are compatible with the system and are environmentally compatible, in particular citric acid, acetic acid, tartaric acid, malic acid, lactic acid, glycolic acid, succinic acid, glutaric acid and/or adipic acid, as well as mineral acids, in particular sulfuric acid, or bases, in particular ammonium or alkali metal hydroxides. Such pH regulators are present in the detergents according to the invention in quantities of preferably no more than 20 wt.%, in particular of 1.2 wt.% to 17 wt.%.

[0042] Graying inhibitors have the task of keeping dirt which has been dissolved away from the textile fibers suspended in the liquor. Water-soluble colloids of a mainly organic nature are suitable for this purpose, for example starch, size, gelatin, salts of ether carboxylic acids or ether sulfonic acids of starch or cellulose or salts of acidic sulfuric acid esters of cellulose or starch. Water-soluble polyamides containing acidic groups are also suitable for this purpose. Derivatives of starch other than those stated above, for example aldehyde starches, may further be used. Cellulose ethers, such as carboxymethylcellulose (Na salt), methylcellulose, hydroxyalkylcellulose and mixed ethers, such as methylhydroxyethylcellulose, methylhydroxypropylcellulose, methylcarboxymethylcellulose and mixtures thereof, are preferably used, for example in quantities of 0.1 to 5 wt.%, relative to the detergent.

[0043] Textile detergents according to the invention may for example contain derivatives of diaminostilbene disulfonic acid or the alkali metal salts thereof as optical brighteners, although they preferably contain no optical brightener as they are to be used as detergent for coloured clothes. If optical brighteners are employed, suitable compounds are, for example, salts of 4,4'-bis(2-anilino-4-morpholino-1,3,5-triazinyl-6-amino)stilbene 2,2'-disulfonic acid or compounds of similar structure which, instead of the morpholino group, bear a diethanolamino group, a methylamino group, an anilino group or a 2-methoxyethylamino group. Brighteners of the substituted diphenylstyryl type may furthermore be present, for example the alkali metal salts of 4,4'-bis(2-sulfostyryl)-diphenyl, 4,4'-bis(4-chloro-3-sulfostyryl)-diphenol, or 4-(4-chlorostyryl)-4'-(2-sulfostyryl)-diphenyl. Mixtures of the above-stated optical brighteners may also be used.

[0044] Especially for use in machine washing, it may be advantageous to add conventional foam inhibitors to the products. Suitable foam inhibitors are, for example, soaps of natural or synthetic origin, which comprise an elevated proportion of C₁₈-C₂₄ fatty acids. Suitable non-surfactant foam inhibitors are, for example, organopolysiloxanes and mixtures thereof with microfine, optionally silanized silica as well as paraffins, waxes, microcrystalline waxes and mixtures thereof with silanized silica or bistearylethylenediamides. Mixtures of different foam inhibitors are also advantageously used, for example mixtures of silicones, paraffins or waxes. The foam inhibitors, in particular foam inhibitors containing silicone and/or paraffin, are preferably bound to a granular carrier substance which is soluble or dispersible in water. Mixtures of paraffins and bistearylethylenediamide are particularly preferred here.

[0045] The production of solid detergents according to the invention presents no difficulties and may proceed in known manner, for example by spray drying or granulation, with enzymes and any further thermally sensitive constituents such as for example bleaching agents optionally subsequently being separately added. Products according to the invention with an elevated bulk density, in particular in the range from 650 g/l to 950 g/l, may preferably be produced by a method comprising an extrusion step. A further preferred production process is using a granulation method.

[0046] Detergents according to the invention may preferably be produced in the form of tablets, which may be monophasic or multiphasic, single-coloured or multicoloured and in particular consist of one layer or of two or more, in particular two, layers, by mixing together all the ingredients, optionally for each layer, in a mixer and compression molding the mixture by means of conventional tablet presses, for example eccentric presses or rotary presses, with pressing forces in the range from approx. 50 to 100 kN, preferably at 60 to 70 kN. In particular in the case of multilayer tablets, it may be advantageous for at least one layer to be preliminarily compression molded. This is preferably carried out at pressing forces of between 5 and 20 kN, in particular at 10 to 15 kN. In this manner, breaking-resistant tablets are straightforwardly obtained which nevertheless dissolve sufficiently rapidly under conditions of use and exhibit breaking and flexural strength values usually of 100 to 200 N, but preferably of above 150 N. A tablet produced in this manner is preferably of a weight of 10 g to 50 g, in particular of 15 g to 40 g. The tablets may be of any desired three-dimensional shape and may be round, oval or polygonal, intermediate shapes also being possible. Corners and edges are advantageously rounded. Round tablets preferably have a diameter of 30 mm to 40 mm. In particular the size of polygonal or cuboidal tablets, which are predominantly introduced by means of the dispenser for example of a dishwashing machine, is dependent on the geometry and volume of this dispenser. Preferred embodiments have, for example, a base area of (20 to 30 mm)×(34 to 40 mm), in particular of 26×36 mm or of 24×38 mm.

[0047] Liquid or pasty detergents according to the invention in the form of solutions containing conventional solvents are generally produced by simply mixing the constituents, which may be introduced into an automatic mixer as an undissolved material or as a solution.

Examples

Example 1

5 **[0048]** In a 2 l multiple-collar flask with a glass stirrer, heating bath, protective gas supply, distillation attachment, packed column, distillation bridge, vacuum separator, distillation flask, cooling trap, and internal thermometer, a total of 640 g (1.45 mole) polyethylene-glycol-monomethyl-ether with an average-weight molecular weight of approximately 440 g/mol (MARLIPAL® 1/12, SASOL Germany GmbH), 388 g (2.0 mole) dimethyl-terephthalate, 110,5 g (1.2 mole) glycerine, 145,8 g (1.2 mole) neopentylglycol, 1.0 g 2,6-di-tert-butyl-p-cresol (lonol® from Shell), as well as 1 ml tetra-isopropyl-ortho-titanate were reacted under protective gas.

10 **[0049]** The reaction mixture was heated to temperatures of between 150 to 220° C and the formed methanol is collected. After a large part of the theoretically anticipated methanol volume had been collected, the reaction mixture was cooled, vacuum was attached, and the mixture was again heated to a maximum temperature of 230° C. The diol-/polyol was thereby distilled of..

15 **[0050]** When the oligoester had reached a hydroxyl value of approximately 90 mg KOH/g substance, the reaction was terminated. The product was obtained as a yellow, low-viscosity oil.

Example 2

20 **[0051]** In analogy to Example 1, a total of 883 g (2.0 mole) of polyethylene-glycol-monoethyl-ether with an average-weight molecular weight of approximately 440 g/mole (MARLIPAL® 1/12 SASOL Germany GmbH), 534 g (2.75 mole) dimethyl-terephthalate, 227.9 g (2.5 mole) glycerine, 68.3 g (1.1 mole) monoethylene glycol, 1.0 g 2,6-di-tert-butyl-p-cresol (lonol® from Shell), as well as 1 ml tetra-isopropyl-orthotitanate were reacted.

25 **[0052]** When the oligoester had reached a hydroxyl value of 112 mg KOH/g substance, the reaction was terminated. The product was obtained as a yellow, low-viscosity oil.

Example 3

30 **[0053]** In analogy to Example 1, a total of 1168 g (1.65 mole) of polyethylene-glycol-monoethyl-ether with an average-weight molecular weight of approximately 440 g/mol (MARLIPAL® 1/12 SASOL Germany GmbH) 437 g (2.25 mole) dimethyl-terephthalat, 165.8 g (1.8 mole) glycerine, 1.0 g 2,6 ditertiary-butyl-p-cresol (lonol® from Shell), as well as 1 ml tetra-isopropyl-orthotitanate were reacted.

35 **[0054]** When the oligoester had reached a hydroxyl value of 68 mg KOH/g substance, the reaction was terminated. The product was obtained as a yellow oil.

Example 4

40 **[0055]** In analogy to Example 1, a total of 800 g (1.8 mole) of polyethylene-glycol-monoethyl-ether with an average-weight molecular weight of approximately 440 g/mole (MARLIPAL® 1/12 SASOL Germany GmbH), 485.5 g (2.5 mole) dimethyl-terephthalate, 184.2 g (2.0 mole) glycerine, 95.1 g (1.25 mole) 1,2 propylene-glycol, 1.0 g 2,6 ditertiary-butyl-p-cresol (lonol® from Shell) as well as 1 ml tetra-isopropyl-orthotitanate were reacted.

[0056] When the oligoester had reached a hydroxyl value of 106 mg KOH/g substance, the reaction is was terminated. The product was obtained as a yellow, viscos oil.

45 Example 5: Dye transfer inhibition

[0057] Liquid detergents were prepared by mixing the ingredients given in the following table 1 (amounts given are in wt.% relative to the complete detergents)

50 Table 1: Detergent compositions s

	C1	D1	C2	D2
Boric acid	0.5	0.5	0.5	0.5
Citric acid	0.23	0.23	0.23	0.23
Glycerol	0.5	0.5	0.5	0.5
Fatty alcohol EO Sulfate-Na C ₁₂₋₁₄ 2EO	3	3	3	3

EP 3 680 317 A1

(continued)

		C1	D1	C2	D2
5	Na C ₁₀₋₁₃ Alkylbenzene sulfonate	2.5	2.5	2.5	2.5
	C ₁₂₋₁₈ Fatty alcohol ethoxylate 7EO	3.1	3.1	3.1	3.1
	NaOH	0.7	0.7	0.7	0.7
	Soap	0.5	0.5	0.5	0.5
10	2-methyl-3(2H)-isothiazolone / 1,2-Benzisothiazol-3(2H)-one	0.0085	0.0085	0.0085	0.0085
	Phosphonate DTPMP	0.20	0.20	0.20	0.20
	Styrene-Acrylate co-polymer	0.1	0.1	0.1	0.1
15	Protease	0.08	0.08	0.08	0.08
	Cellulase	0.1	0.1	0.1	0.1
	Mannanase	0.05	0.05	0.05	0.05
	Amylase	0.05	0.05	0.05	0.05
20	Lipase	0.08	0.08	0.08	0.08
	Perfume	0.5	0.5	0.5	0.5
	polyester of example 1	-	0.5	-	2.5
25	Texcare® SRN170	-	-	0.5	-
	Water	ad 100			

[0058] Detergents D1 and D2 were according to the invention; detergent C1 did not comprise dye transfer inhibitor, and detergent C2 comprised the known soil release polyester Texcare® SRN170 instead of the polyester according to the invention.

[0059] White fabrics (max. 2.5 Kg) made of the materials given in tables 2, 3, and 4 were washed in a Miele Softronic® W1935 WTH washing machine, using the program "Care program +" at 40 °C with water of hardness 16 °dH, in the presence of a standardized soil sheet and of 5 g of indigo per wash load. After drying of the fabrics, the greyscale-index, according to ISO 20105 A05, and the decrease of their whiteness (ΔY) were determined spectrometrically, using a Datacolor® DC600-2 spectrometer.

Table 2: Greyscale-index

Fabric	C1	D1	C2
40 Cotton	2.9	3.7	3.1
Terry cotton	2.4	3.5	2.9
Ribbed cotton	1.9	3.5	3.0
45 Polyester	1.4	3.2	2.7
Polyester/cotton (65/35)	1.8	3.2	2.6
Viscose	3,2	4,2	3,8
Polyamide	3,2	4,3	4,2
50 Polyacrylate/Polyurethane (81/19)	0,9	1,2	0,9

Table 3: Change in whiteness

Fabric	D1	C2
55 Cotton	-10.5	-17.1

(continued)

Fabric	D1	C2
Terry cotton	-10.5	-16.5
Polyester	-14.0	-21.4
Polyester/cotton (65/35)	-14.4	-22
Viscose	-4	-7,6
Polyamide	-6,1	-7,1
Polyacrylate/Elastane (81/19)	-49,9	-57,2

Table 4: Change in whiteness by increasing polymer concentration

Fabric	C1	D1	D2
Cotton	-23,1	-10,0	-5,5
Terry cotton	-18,6	-8,5	-6,4
Ribbed cotton	-35,7	-15,1	-8,1
Polyester	-28,3	-8,0	-2,2
Polyester/cotton (65/35)	-37,2	-19,2	-7,1
Viscose	-14,3	-5,7	-2,5
Polyamide	-12,2	-5,4	-3,3
Polyacrylate/Elastane (81/19)	-58,6	-48,7	-23,9

[0060] In tables 2, 3 and 4 it can be seen that significantly less dye is transferred to the fabrics in case of using the polymer and by increasing concentration of the polymer according to the invention.

Claims

1. Use of polyether polyesters obtainable by reacting of

- (A) 20 to 50 mole % of one or more dicarboxylic compounds,
- (B) 10.1 to 29.9 mole % of one or more polyol compound with at least 3 OH-groups,
- (C) 10.1 to 50 mole % of one or more water-soluble alkylene oxide addition products of one or more C2- to C4-alkylene oxide to a C1- to C6-alcohol in a molar ratio of 4 to 100 mole alkylene oxide, to 1 mole of alcohol, and
- (D) 0 to 30 mole % of one or more diol compounds

for avoiding the transfer of textile dyes from dyed textiles onto undyed or differently coloured textiles when they are jointly washed in aqueous solutions, in particular surfactant-containing aqueous solutions.

2. Use of polyether polyesters obtainable by reacting of

- (A) 20 to 50 mole % of one or more dicarboxylic compounds,
- (B) 10.1 to 29.9 mole % of one or more polyol compound with at least 3 OH-groups,
- (C) 10.1 to 50 mole % of one or more water-soluble alkylene oxide addition products of one or more C2- to C4-alkylene oxide to a C1- to C6-alcohol in a molar ratio of 4 to 100 mole alkylene oxide, to 1 mole of alcohol, and
- (D) 0 to 30 mole % of one or more diol compounds

for avoiding the modification of the colour appearance of dyed textiles when they are washed in aqueous solutions, in particular surfactant-containing aqueous solutions.

EP 3 680 317 A1

3. Method for washing dyed textiles in surfactant-containing aqueous solutions, wherein dyed textiles in need of cleaning are contacted with a surfactant-containing aqueous solution which contains a polyether polyester obtainable by reacting of

- 5 (A) 20 to 50 mole % of one or more dicarboxylic compounds,
(B) 10.1 to 29.9 mole % of one or more polyol compound with at least 3 OH-groups,
(C) 10.1 to 50 mole % of one or more water-soluble alkylene oxide addition products of one or more C2- to C4-alkylene oxide to a C1- to C6-alcohol in a molar ratio of 4 to 100 mole alkylene oxide, to 1 mole of alcohol, and
10 (D) 0 to 30 mole % of one or more diol compounds.

4. Method according to claim 3, wherein it is performed at temperatures in the range of from 10°C to 100 °C, especially from 20 °C to 60 °C.

5. Method according to claim 3 or 4, wherein the concentration of polyester in the aqueous surfactant-containing wash liquor preferably is in the range of from 0.1 ppm to 1 wt.%, especially from 1 ppm to 1000 ppm.

6. Use according to claim 1 or 2, or method according to any of claims 3 to 5, wherein the textiles are dyed with indigo.

7. Method or use according to any preceding claim, **characterized by** employing a detergent that contains 0.001 wt.% to 10 wt.%, in particular 0.05 wt.% to 5 wt.%, of the dye transfer-inhibiting polyether polyester.

8. Method or use according to claim 7, **characterized by** employing a detergent that contains an enzyme.

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EUROPEAN SEARCH REPORT

Application Number
EP 19 15 1442

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EP 19 15 1442

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