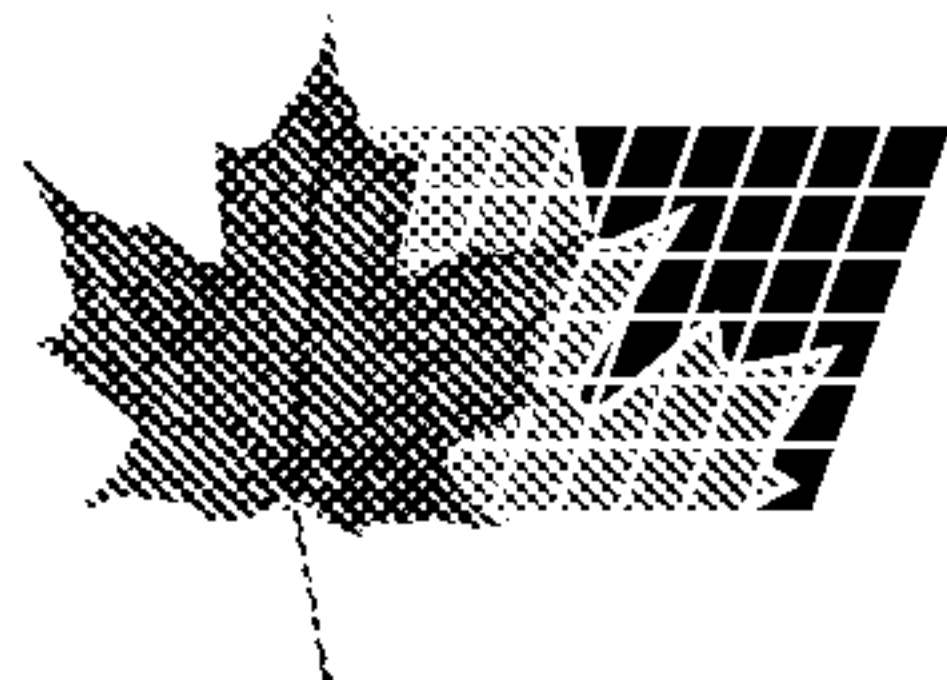




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(51) Int.Cl.⁷ C11D 17/08, C11D 1/83, C11D 1/72, C11D 3/48, C11D 1/22

(30) 1999/09/23 (199 45 506.6) DE

(54) **EPURATEUR POLYPHASIQUE A L'EAU ANTIMICROBIEN**

(54) **ANTIMICROBIAL AQUEOUS MULTIPHASE CLEANER**

(57) An aqueous liquid multiphase surfactant-containing cleaner having at least two continuous phases, which has at least one lower aqueous phase I and an upper aqueous phase II which is immiscible with the first phase and which can be temporarily converted into an emulsion by shaking, comprises at least one antimicrobial active ingredient, forms a product together with a spray dispenser and can be used for the cleaning and/or disinfection or sanitation of hard surfaces, and can be prepared by blending directly from its raw materials, subsequently mixing thoroughly and finally allowing the composition to stand for separation of the temporary emulsion.

Abstract

An aqueous liquid multiphase surfactant-containing cleaner having at least two continuous phases, which has at least one lower aqueous phase I and an upper aqueous phase II which is immiscible with the first phase and which can be temporarily converted into an emulsion by shaking, comprises at least one antimicrobial active ingredient, forms a product together with a spray dispenser and can be used for the cleaning and/or disinfection or sanitation of hard surfaces, and can be prepared by blending directly from its raw materials, subsequently mixing thoroughly and finally allowing the composition to stand for separation of the temporary emulsion.

Antimicrobial aqueous multiphase cleaner

Field of the Invention

5 The invention relates to antimicrobial aqueous multiphase liquid cleaners which can be emulsified temporarily by shaking, to the use thereof for the cleaning and/or disinfection or sanitation of hard surfaces, to a product comprising the composition and to a process for the preparation thereof.

Background of the Invention

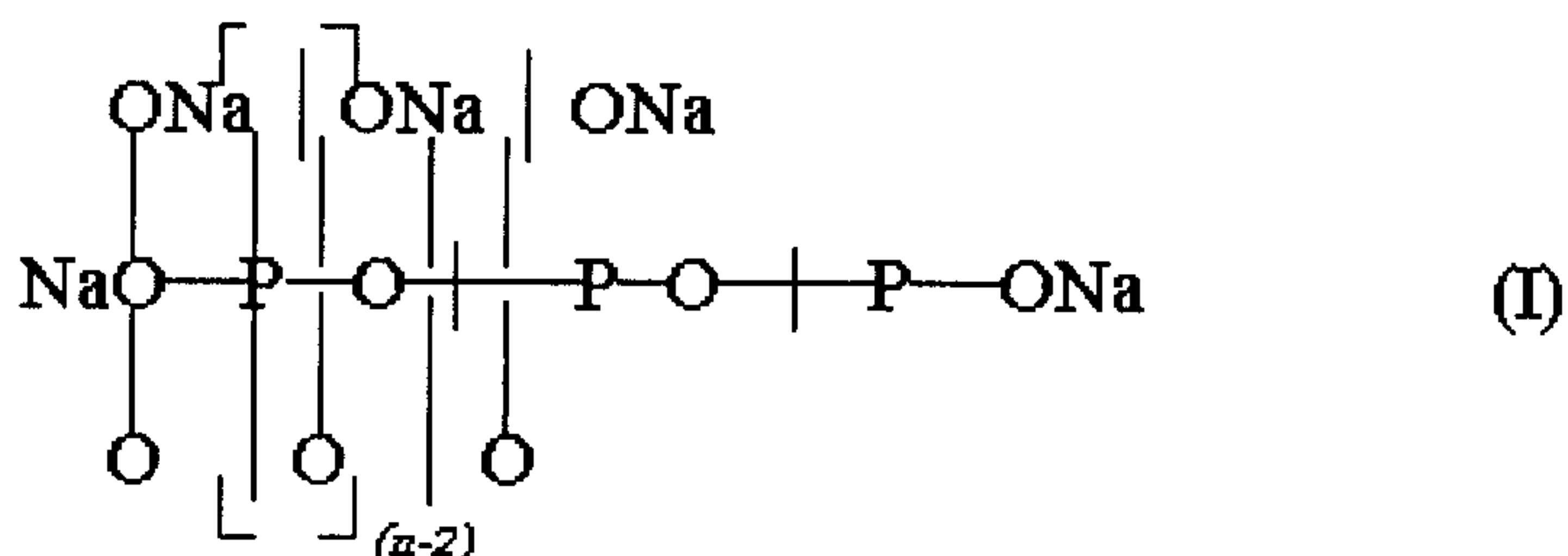
10 Cleaners which can be used universally for all hard, wet or damp wipable surfaces in the domestic and commercial sectors are known as all-purpose cleaners and are largely neutral to slightly alkaline aqueous liquid products which comprise 1 to 30% by weight
15 surfactants, 0 to 5% by weight of builders (e.g. citrates, gluconates, soda, polycarboxylates), 0 to 10% by weight of hydrotropic agents (e.g. alcohols, urea), 0 to 10% by weight of water-soluble solvents (e.g.
20 alcohols, glycol ethers), and, if desired, inter alia skin protectants, dyes and fragrances. For use in the sanitary sector as bath cleaners, by contrast, such cleaners are often rendered acidic by the addition of acids in order that they can more readily remove lime
25 and water marks. They are mostly used as ca. 1% strength solutions in water, but also neat for local stain removal. Ready-to-use all-purpose cleaners are also available commercially as spray cleaners.

Such aqueous liquid cleaners are usually in the
30 form of homogeneous stable solutions or dispersions. The use of certain, in particular hydrophobic, components in such cleaners for improving the cleaning performance can, however, result in this homogeneity being lost and inhomogeneous compositions being
35 obtained, the acceptance of which by the consumer is to be regarded as low. In such cases, there is a need for the alternative formulation of compositions which, despite their inhomogeneity, have a defined external

appearance and use form which is acceptable to the consumer.

Furthermore, in addition to the high primary detergency, such a cleaner is nowadays increasingly expected to also have antimicrobial action. To this end, antimicrobial active ingredients, for example surface-active quaternary compounds, are incorporated into the cleaners. The use of antimicrobial active ingredients in most cases severely restricts flexibility during formulation of a cleaner since, for example, the pH has to be matched to the antimicrobial active ingredients and, depending on the antimicrobial active ingredient, incompatibilities with certain further ingredients arise, such as the incompatibility of surface-active quaternary compounds with the highly cleaning-effective anionic surfactants. For this reason, the antimicrobial action is usually realized at the expense of the detergency.

European Patent Application 116 422 describes a liquid hair or body shampoo having two aqueous phases which can be dispersed temporarily in one another by shaking and where both phases are miscible with water in any ratio. Here, the upper phase comprises 8 to 25% by weight, based on the total composition, of at least one surfactant, and the lower phase at least 6% by weight, based on the total composition, of dissolved sodium hexametaphosphate of the formula I



in which n is a mean value of about 12. Optionally, further builder salts may be present in the lower phase. Surfactants which may be present are anionic, cationic, amphoteric and/or nonionic surfactants, at least one anionic surfactant preferably being present.

German Laid-Open Applications 195 01 184,
195 01 187 and 195 01 188 (Henkel KGaA) disclose hair-
treatment compositions in the form of a two-phase
system which have one oil phase and one water phase,
5 where the oil phase is based on silicone oil or
paraffin oil, and are temporarily miscible by
mechanical action.

Summary of the Invention

10 The object of the present invention was to
provide storage-stable compositions with high
detergency and antimicrobial action for the cleaning
and/or disinfection or sanitation of hard surfaces in a
form which is easy to handle and acceptable for the
15 consumer.

The invention provides an aqueous liquid
multiphase surfactant-containing cleaner having at
least two continuous phases, which has at least one
lower aqueous phase I and an upper aqueous phase II
20 which is immiscible with the first phase and which can
be temporarily converted into an emulsion by shaking,
and which comprises at least one antimicrobial active
ingredient.

The invention likewise provides for the use of
25 a composition according to the invention for the
cleaning and/or disinfection or sanitation of hard
surfaces.

Within the scope of the teaching according to
the invention, the terms disinfection, sanitation,
30 antimicrobial action and antimicrobial active
ingredient have the meanings customary in the art,
which are given, for example, by K.H. Wallhäußer in
"Praxis der Sterilisation, Desinfektion -
Konservierung : Keimidentifizierung - Betriebshygiene
35 [Practice of sterilization, disinfection -
preservation: microbe identification - plant hygiene"]
(5th Ed. - Stuttgart; New York: Thieme, 1995). While
disinfection in the narrower sense of medical practice

means the killing of, theoretically all, infection microbes, sanitation means the elimination as far as possible of all microbes, including saprophytic ones which are normally harmless for man. In this connection, the degree of disinfection or sanitation is dependent on the antimicrobial action of the composition used, which decreases with decreasing content of antimicrobial active ingredient or increasing dilution of the composition for use.

Within the scope of the present invention, *temporary* means that, preferably, 90% of the cracking of the emulsion formed by shaking into the separate phases at temperatures of from about 20°C to about 40°C takes place within 2 minutes to 10 hours, and the final 2% of the cracking into the phase state prior to shaking takes place within a further 15 minutes to 50 hours.

Furthermore, within the scope of the present invention, unless expressly stated otherwise, the use of a salt is just as possible as the use of the corresponding acid/base pair of the salt which produces the salt or solution thereof only *in situ* with neutralization, even if the respective alternative is not always explicitly formulated in the present teaching. In this respect, for example, potassium citrate and the combination of citric acid/sodium hydroxide are equivalent alternatives.

Finally, within the scope of the present invention, if a certain component can be used for different purposes, then its use may be described more than once below, knowingly or unknowingly. This is true, for example, for citric acid, which is used both as an acid to adjust the pH and as a phase-separation auxiliary and builder.

As well as an antimicrobial action, the compositions according to the invention are notable for high detergency, in particular on fat-containing soilings, when applied neat or in dilute form. The

5 multiphase nature, in particular the two-phase nature,
permits the realization of antimicrobial action and
also high detergency. A particular advantage is the low
foaming capacity, which has a positive effect on the
detergency, of the compositions according to the
invention without the addition of foam inhibitors such
as soaps. Furthermore, the compositions exhibit
favorable residue behavior. The individual phases in
the composition are stable over a long period without,
for example, deposits forming, and conversion to a
temporary emulsion remains reversible even after
frequent shaking. Furthermore, the compositions permit
the stable incorporation of components which can be
stably incorporated into single-phase aqueous solutions
or stable emulsions or microemulsions only through the
use of solvents, solubilizers or emulsifiers, in
particular of the hydrophobic components and perfume
oils described below. In addition, the multiphase
nature, in particular two-phase nature, permits
improvement of the chemical stability of the
composition as a result of the separation of
ingredients into separate phases.

Detailed Description of the Invention

Antimicrobial active ingredient

The composition according to the invention comprises,
for the antimicrobial action, at least one
antimicrobial active ingredient, preferably chosen from
the group of alcohols, aldehydes, antimicrobial acids
or salts thereof, carboxylic esters, acid amides,
phenols, phenol derivatives, diphenyls,
diphenylalkanes, urea derivatives, oxygen- and
nitrogen-acetals and -formals, benzamidines,
isothiazoles and derivatives thereof, such as
isothiazolines and isothiazolinones, phthalimide
derivatives, pyridine derivatives, antimicrobial
surface-active compounds, guanidines, antimicrobial
amphoteric compounds, quinolines, 1,2-dibromo-2,4-

dicyanobutane, iodo-2-propynylbutyl carbamate, iodine, iodophores and peroxides, in particular chosen from ethanol, n-propanol, isopropanol, 1,3-butanediol, phenoxyethanol, 1,2-propylene glycol, glycerol, undecylenic acid, citric acid, lactic acid, benzoic acid, salicylic acid, thymol, 2-benzyl-4-chlorophenol, 2,2'-methylenebis(6-bromo-4-chlorophenyl), 2,4,4'-trichloro-2'-hydroxydiphenyl ether, N-(4-chlorophenyl)-N-(3,4-dichlorophenyl)urea, N,N'-(1,10-decanediyl-di-1-pyrid-4-ylidene)bis(1-octanamine) dihydrochloride, N,N'-bis(4-chlorophenyl)-3,12-diimino-2,4,11,13-tetra-azatetradecanediimide amide, antimicrobial quaternary surface-active compounds, guanidines, amphoteric agents, particularly preferably at least one antimicrobially active surface-active quaternary compound, most preferably containing an ammonium, sulfonium, phosphonium, iodonium or arsonium group, as described, for example, by K.H. Wallhäußer in "Praxis der Sterilisation, Desinfektion - Konservierung : Keimidentifizierung - Betriebshygiene [Practice of sterilization, disinfection - preservation: microbe identification - plant hygiene]" (5th Ed. - Stuttgart; New York: Thieme, 1995).

The composition according to the invention particularly preferably comprises at least one quaternary ammonium compound (QAC) having antimicrobial action according to the general formula $(R^I)(R^{II})(R^{III})(R^{IV})N^+X^-$, in which R^I to R^{IV} are identical or different C_1 - C_{22} -alkyl radicals, C_7 - C_{28} -aralkyl radicals or heterocyclic radicals, where two, or in the case of an aromatic incorporation, such as in pyridine, even three radicals, together with the nitrogen atom, form the heterocycle, e.g. a pyridinium or imidazolinium compound, and X^- is halide ions, sulfate ions, hydroxide ions or similar anions. For optimum antimicrobial action, at least one of the radicals preferably has a chain length of 8 to 18, in particular 12 to 16, carbon atoms.

QACs can be prepared by reacting tertiary amines with alkylating agents, such as, for example, methyl chloride, benzyl chloride, dimethyl sulfate, dodecyl bromide, and also ethylene oxide. The
5 alkylation of tertiary amines having one long alkyl radical and two methyl groups proceeds particularly readily, and the quaternization of tertiary amines having two long radicals and one methyl group can also be carried out using methyl chloride under mild
10 conditions. Amines which have three long alkyl radicals or hydroxyl-substituted alkyl radicals are not very reactive and are preferably quaternized using dimethyl sulfate.

Suitable QACs are, for example, benzalkonium
15 chloride (N-alkyl-N,N-dimethylbenzylammonium chloride, CAS No. 8001-54-5), Benzalkon B (*m,p*-dichloro-benzyltrimethyl- C_{12} -alkylammonium chloride, CAS No. 58390-78-6), benzoxonium chloride (benzyltrimethylbis(2-hydroxyethyl)ammonium chloride), cetrimonium bromide
20 (N-hexadecyl-N,N-trimethylammonium bromide, CAS No. 57-09-0), benzethonium chloride (N,N-dimethyl-N-[2-2-[*p*-(1,1,3,3-tetramethylbutyl)phenoxy]ethoxy]ethyl)-benzylammonium chloride, CAS No. 121-54-0), dialkyldimethylammonium chlorides, such as di-*n*-
25 decyldimethylammonium chloride (CAS No. 7173-51-5-5), didecyldimethylammonium bromide (CAS No. 2390-68-3), dioctyldimethylammonium chloride, 1-cetylpyridinium chloride (CAS No. 123-03-5) and thiazoline iodide (CAS No. 15764-48-1) and mixtures thereof. Particularly
30 preferred QACs are the benzalkonium chlorides containing C_8 - C_{18} -alkyl radicals, in particular C_{12} - C_{14} -alkylbenzyltrimethylammonium chloride.

In a further particularly preferred embodiment of the invention, the composition comprises, as
35 antimicrobial active ingredient(s), at least one antimicrobial acid, preferably organic acid, particularly preferably chosen from the group comprising undecylenic acid, citric acid, lactic acid,

benzoic acid, salicylic acid, formic acid and acetic acid, and mixtures thereof, most preferably chosen from the group comprising lactic acid, benzoic acid, salicylic acid and formic acid and mixtures thereof, in particular mixtures of salicylic acid with formic acid, lactic acid and/or benzoic acid, for example mixtures of salicylic acid with formic acid.

The content of at least one antimicrobial active ingredient, preferably at least one surface-active quaternary compound and/or an antimicrobial acid, in particular at least one surface-active quaternary ammonium compound and/or an organic acid, is usually 0.1 to 10% by weight, preferably 0.2 to 5% by weight, in particular 0.5 to 3% by weight, particularly preferably 1 to 2% by weight, for example 1.5% by weight.

Phases

In the simplest case, a composition according to the invention consists of a lower continuous phase, which consists of the whole of phase I, and of an upper continuous phase, which consists of the whole of phase II. One or more continuous phases of a composition according to the invention can, however, also comprise parts of another phase in emulsified form, meaning that in such a composition, for example, some of phase I is in the form of continuous phase I, which is the lower continuous phase of the composition, and some is emulsified as discontinuous phase I in the upper continuous phase II. The same applies to phase II and further continuous phases.

In a preferred embodiment of the invention, the continuous phases I and II are delimited from one another by a sharp interface.

In a particular embodiment of the invention, one or both of the continuous phases I and II comprise parts, preferably 0.1 to 25% by volume, in particular 0.2 to 15% by volume, based on the volume of the respective continuous phase, of the other phase in each

case as dispersant. Here, the continuous phase I or II is then reduced by the part by volume which is distributed as dispersant in the other phase in each case. Preference is given here to compositions in which phase I is emulsified in phase II in amounts of from 0.1 to 25% by volume, preferably 0.2 to 15% by volume, based on the volume of phase II.

In a further particular embodiment of the invention, in addition to the continuous phases I and II, part of the two phases is in the form of an emulsion of one of the two phases in the other phase, this emulsion being delimited by two sharp interfaces, one upper and one lower, from the parts of phases I and II not involved in the emulsion.

The compositions according to the invention comprise phase I and II in a volume ratio of from 90:10 to 10:90, preferably 75:25 to 25:75, in particular 65:35 to 35:65, particularly preferably 60:40 to 40:60, most preferably 55:45 to 45:55, for example 50:50.

Surfactants

The compositions according to the invention can comprise, as surfactant component, one or more nonionic, anionic, amphoteric or cationic surfactants or surfactant mixtures of one, more than one or all of these classes of surfactant. The compositions comprise surfactants in amounts, based on the composition, of customarily 0.01 to 30% by weight, preferably 0.1 to 20% by weight, in particular 1 to 15% by weight, particularly preferably 3 to 12% by weight, most preferably 5 to 10% by weight, where any antimicrobial surface-active compounds which may be present are regarded in terms of amount not as surfactants but as antimicrobial active ingredients.

Nonionic surfactants

Suitable nonionic surfactants are, for example, C₆-C₂₂-alkyl alcohol polyglycol ethers, alkyl polyglycosides and nitrogen-containing surfactants and also di-C₁-C₁₂-alkyl sulfosuccinates or mixtures

thereof, in particular of the first two. The compositions comprise nonionic surfactants in amounts, based on the composition, of customarily 0 to 30% by weight, preferably 0.1 to 20% by weight, in particular 1 to 14% by weight, particularly preferably 3 to 12% by weight, most preferably 5 to 10% by weight, for example 8.5% by weight. Presumably, nonionic surfactants, with their nonionic character, advantageously contribute to the individual phases in the composition being stable over a long period without, for example, the formation of deposits, and to the conversion to a temporary emulsion remaining reversible even after frequent shaking.

C₆-C₂₂-alkyl alcohol polypropylene glycol/polyethylene glycol ethers are preferred known nonionic surfactants. They can be described by the formula II, R¹O-(CH₂CH(CH₃)O)_p(CH₂CH₂O)_e-H, in which R¹ is a linear or branched, aliphatic alkyl and/or alkenyl radical having 6 to 22, preferably 8 to 18, in particular 10 to 16, carbon atoms, p is 0 or numbers from 1 to 3, and e is numbers from 1 to 20.

The C₆-C₂₂-alkyl alcohol polyglycol ethers of the formula II can be obtained by addition of propylene oxide and/or ethylene oxide to alkyl alcohols, preferably to oxo alcohols, the branched-chain primary alcohols obtainable by oxo synthesis, or to fatty alcohols, in particular to fatty alcohols. Typical examples are polyglycol ethers of the formula II in which R¹ is an alkyl radical having 8 to 18 carbon atoms, p is 0 to 2 and e is numbers from 2 to 7. Preferred representatives are, for example, C₁₀-C₁₄-fatty alcohol+1PO+6EO ethers (p = 1, e = 6), C₁₂-C₁₆-fatty alcohol+5.5EO (p = 0, e = 5.5), C₁₂-C₁₈-fatty alcohol+7EO ethers (p = 0, e = 7) and isodecanol+6EO (R¹ = isomeric mixture of C₁₀-oxo alcohol radicals, (p = 0, e = 6) and mixtures thereof. In preferred mixtures, at least one representative of the formula II having a linear alkyl radical R¹ is combined with at least one

representative of the formula II having one branched alkyl radical R^1 , for example C_{12} - C_{16} -fatty alcohol+5.5EO and isodecanol+6EO. Here, it is further preferred that the linear alkyl radical contains more carbon atoms than the branched alkyl radical.

It is also possible to use terminally capped C_6 - C_{22} -alkyl alcohol polyglycol ethers, i.e. compounds in which the free OH group in the formula II is etherified. The terminally capped C_6 - C_{22} -alkyl alcohol polyglycol ethers can be obtained by relevant methods of preparative organic chemistry. Preference is given to reacting C_6 - C_{22} -alkyl alcohol polyglycol ethers in the presence of bases with alkyl halides, in particular butyl chloride or benzyl chloride. Typical examples are mixed ethers of the formula II in which R^1 is a technical-grade fatty alcohol radical, preferably $C_{12/14}$ -cocoalkyl radical, p is 0 and e is from 5 to 10, which have been capped with a butyl group.

Preferred nonionic surfactants are also alkyl polyglycosides (APGs) of the formula III, $R^2O[G]_x$, in which R^2 is a linear or branched, saturated or unsaturated alkyl radical having 8 to 22 carbon atoms, $[G]$ is a glycosidically linked sugar radical and x is a number from 1 to 10. APGs are nonionic surfactants and are known substances which can be obtained by the relevant methods of preparative organic chemistry. The index number x in the general formula III gives the degree of oligomerization (degree of DP), i.e. the distribution of mono- and oligoglycosides, and is a number between 1 and 10. While x in a given compound must always be an integer and here can assume in particular the values $x = 1$ to 6, the value x for a certain alkyl glycoside is an analytically determined arithmetical parameter which is in most cases a fraction. Preference is given to using alkyl glycosides having a mean degree of oligomerization x of from 1.1 to 3.0. From an application-related viewpoint, preference is given to those alkyl glycosides whose

degree of oligomerization is less than 1.7 and in particular is between 1.2 and 1.6. The glycosidic sugar used is preferably xylose, but in particular glucose.

5 The alkyl or alkenyl radical R^2 (formula III) can be derived from primary alcohols having 8 to 22, preferably 8 to 14, carbon atoms. Typical examples are caproic alcohol, caprylic alcohol, capric alcohol and undecyl alcohol, and technical-grade mixtures thereof, as produced, for example, in the course of the
10 hydrogenation of technical-grade fatty acid methyl esters or in the course of the hydrogenation of aldehydes from the ROELEN oxo synthesis.

 However, the alkyl or alkenyl radical R^2 is preferably derived from lauryl alcohol, myristyl
15 alcohol, cetyl alcohol, palmoleyl alcohol, stearyl alcohol, isostearyl alcohol or oleyl alcohol. Further examples are elaidyl alcohol, petroselinyl alcohol, arachidyl alcohol, gadoleyl alcohol, behenyl alcohol, erucyl alcohol, and technical-grade mixtures thereof.

20 Further nonionic surfactants which may be present are nitrogen-containing surfactants, e.g. fatty acid polyhydroxyamides, for example glucamides, and ethoxylates of alkylamines, vicinal diols and/or carboxamides which have alkyl groups containing 10 to
25 22 carbon atoms, preferably 12 to 18 carbon atoms. The degree of ethoxylation of these compounds is generally between 1 and 20, preferably between 3 and 10. Preference is given to ethanolamide derivatives of alkanolic acids having 8 to 22 carbon atoms, preferably
30 12 to 16 carbon atoms. Particularly suitable compounds include lauric acid monoethanolamide, myristic acid monoethanolamide and palmitic acid monoethanolamide.

 In a preferred embodiment, the compositions according to the invention comprise one or more
35 nonionic surfactants, preferably C_6 - C_{22} -alkyl alcohol polyglycol ethers and/or alkyl polyglycosides, in particular C_6 - C_{22} -alkyl alcohol polyglycol ethers.

Anionic surfactants

Suitable anionic surfactants are the preferred C₆-C₂₂-alkyl sulfates, C₆-C₂₂-alkyl ether sulfates, i.e. the sulfation products of the alcohol ethers of the formula II, and/or anion-active sulfonic acids or salts thereof, the sulfonates, and also C₆-C₂₂-carboxamide ether sulfates, mono-C₁-C₁₂-alkyl sulfosuccinates, C₆-C₂₂-alkyl polyglycol ether carboxylates, C₆-C₂₂-N-acyl taurides, C₆-C₂₂-N-sarcosinates and C₆-C₂₂-alkyl isethionates and mixtures thereof.

Within the meaning of the teaching according to the invention, *anion-active sulfonic acids* are sulfonic acids of the formula R-SO₃H which carry a partially or completely straight-chain and/or branched and/or cyclic, and also partially or completely saturated and/or unsaturated and/or aromatic C₆-₃₂-hydrocarbon radical R, for example C₆-₂₂-alkanesulfonic acids, C₆-₂₂- α -olefinsulfonic acids, sulfonated C₆-C₂₂-fatty acids and C₁-₂₂-alkyl-C₆-₁₀-arenesulfonic acids, such as C₁-₂₂-alkylbenzenesulfonic acids or C₁-₂₂-alkylnaphthalene-sulfonic acids, preferably linear C₈-₁₆-alkylbenzenesulfonic acids, in particular linear C₁₀-₁₄-alkyl-, C₁₀-₁₃-alkyl- and C₁₂-alkylbenzenesulfonic acids.

The anionic surfactants are used in the form of their alkali metal and alkaline earth metal salts, in particular sodium, potassium and magnesium salts, and also ammonium and mono-, di-, tri- and tetraalkyl-ammonium salts, and in the case of the anion-active sulfonic acids, also in the form of the acid, e.g. dodecylbenzenesulfonic acid, C₁₀-C₁₃-alkylbenzenesulfonic acid and/or C₁₀-C₁₄-alkylbenzenesulfonic acid. If the sulfonic acid is used, it is usually partially or completely neutralized, depending on the pH of the composition to be established, *in situ* using one or more corresponding bases, e.g. alkali metal hydroxides and alkaline earth metal hydroxides, in particular sodium hydroxide, potassium hydroxide and magnesium hydroxide, and ammonia or mono-, di-, tri- or tetraalkylamine, to give the abovementioned salts. The

compositions comprise one or more anionic surfactants in amounts, based on the composition, of from 0 to less than 30% by weight, preferably 0.1 to 20% by weight, in particular 0.5 to 10% by weight, most preferably 0.7 to 5% by weight, for example 1 or 1.2% by weight.

The use of the particularly preferred alkylbenzenesulfonic acids may, particularly if the content of sodium chloride is high and/or sodium hydroxide is used to establish the pH, lead to clouding in the region of the boundary layer between phases I and II. This problem is counteracted by the use of citric acid or citrate. A further improvement occurs, however, during neutralization of the alkylbenzenesulfonic acid with potassium hydroxide which, in this regard, has a particularly positive effect on the phase separation, the clarity of the phases and the sharpness, and also the lack of or freedom from clouding of the phase boundary layer.

Because of their foam-suppressing and thickening properties, the compositions according to the invention can also comprise soaps, i.e. alkali metal or ammonium salts of saturated or unsaturated C₆-C₂₂-fatty acids. The soaps can be used in an amount up to 5% by weight, preferably from 0.1 to 2% by weight.

However, if cationic antimicrobial active ingredients, such as surface-active quaternary compounds, in particular quaternary ammonium compounds, are used, the compositions preferably comprise, according to the above quantities, as low a content as possible of anionic surfactants including soaps and, in a particularly preferred embodiment of the invention, are entirely free from anionic surfactants including soaps since the latter are frequently incompatible with the antimicrobially active quaternary compounds to a greater or lesser extent. In this connection, it is self-evident to the person skilled in the art that he must verify the compatibility of the anionic

surfactants with the antimicrobial active ingredients with regard to the antimicrobial action.

Amphoteric surfactants

5 Suitable amphoteric surfactants are, for example, betaines of the formula $(R^3)(R^4)(R^5)N^+CH_2COO^-$, in which R^3 is an alkyl radical having 8 to 25, preferably 10 to 21, carbon atoms which is optionally interrupted by heteroatoms or heteroatom groups, and R^4 and R^5 are identical or different alkyl radicals having
10 1 to 3 carbon atoms, in particular C_{10} - C_{22} -alkyldimethylcarboxymethylbetaine and C_{11} - C_{17} -alkylamidopropyl-dimethylcarboxymethylbetaine. The compositions comprise one or more amphoteric surfactants in amounts, based on the composition, of 0 to 15% by weight, preferably 0.01
15 to 10% by weight, in particular 0.1 to 5% by weight.

Cationic surfactants

 Suitable cationic surfactants are, for example, the above-described surface-active quaternary compounds, in particular the surface-active quaternary
20 ammonium compounds. If surface-active quaternary compounds are not already present as antimicrobial active ingredients, the compositions comprise one or more cationic surfactants in amounts, based on the composition, of from 0 to 10% by weight, preferably
25 0.01 to 5% by weight, in particular 0.1 to 3% by weight.

Hydrophobic components

 In a particularly advantageous embodiment of the invention, the compositions comprise one or more
30 hydrophobic components. The hydrophobic components not only improve the cleaning action on hydrophobic contaminants such as grease soiling, but additionally have a positive effect on the phase separation and the reversibility thereof. Here, the form, defined as
35 inhomogeneous, of the multiphase compositions according to the invention permits stable incorporation, in particular also in relatively large amounts, of the hydrophobic components, which can only be stably

incorporated into single-phase aqueous solutions or stable emulsions or microemulsions using solvents, stabilizers or emulsifiers in, in most cases, very limited amounts.

5 Suitable hydrophobic components are, for example, dialkyl ethers having identical or different C₄- to C₁₄-alkyl radicals, in particular linear dioctyl ethers; monomeric or homo- or heteropolymeric, in particular monomeric and homodi- and trimeric C₂-C₄-
10 alkylene glycols which have been etherified, esterified and/or etherified/esterified with aliphatic or aromatic alcohols, e.g. methanol, ethanol, n-propanol, n-butanol, tert-butanol or phenol, or carboxylic acids, e.g. acetic acid or carbonic acid, for example the
15 products sold under the trade name *Dowanol*[®] from *Dow Chemical*, and those sold under the trade name *Arcosolv*[®] and *Arconate*[®] from *Arco Chemical* and which are referred to below by their *INCI* name in accordance with the
20 *International Dictionary of Cosmetic Ingredients* from *The Cosmetic, Toiletry, and Fragrance Association* (CTFA), e.g. Butoxydiglycol (*Dowanol*[®] DB), Methoxydiglycol (*Dowanol*[®] DM), PPG-2 Methyl Ether (*Dowanol*[®] DPM), PPG-2 Methyl Ether Acetate (*Dowanol*[®] DPMA), PPG-2 Butyl Ether (*Dowanol*[®] DpNB), PPG-2 Propyl
25 Ether (*Dowanol*[®] DPnP), Butoxyethanol (*Dowanol*[®] EB), Phenoxyethanol (*Dowanol*[®] EPh), Methoxyisopropanol (*Dowanol*[®] PM), PPG-1 Methyl Ether Acetate (*Dowanol*[®] PMA), Butoxyisopropanol (*Dowanol*[®] PnB), Propylene Glycol Propyl Ether (*Dowanol*[®] PnP), Phenoxyisopropanol
30 (*Dowanol*[®] PPh), PPG-3 Methyl Ether (*Dowanol*[®] TPM) and PPG-3 Butyl Ether (*Dowanol*[®] TPnB) and Ethoxyisopropanol (*Arcosolv*[®] PE), tert-Butoxyisopropanol (*Arcosolv*[®] PTB), PPG-2 tert-Butyl Ether (*Arcosolv*[®] DPTB) and Propylenecarbonate (*Arconate*[®] PC), in particular PPG-2
35 Propyl Ether (Dipropyleneglycol-n-butyl ether, (*Dowanol*[®] DPnP); hydrocarbons having a boiling range from 100 to 300°C, in particular 140 to 280°C, e.g. aliphatic hydrocarbons having a boiling range from 145

to 200°C, isoparaffins having a boiling range from 200 to 260°C; essential oils, in particular limonene and the pine oil extracted from pine roots and stumps; and also mixtures of these hydrophobic components, in particular mixtures of two or three of said hydrophobic components.

Preferred mixtures of hydrophobic components are mixtures of various dialkyl ethers, of dialkyl ethers and etherified or esterified mono- or polymeric C₂-C₄-alkylene glycols, of dialkyl ethers and hydrocarbons, of dialkyl ethers and essential oils, of hydrocarbons and essential oils, of dialkyl ethers and hydrocarbons and essential oils and of these mixtures. Particularly preferred mixtures of hydrophobic components are mixtures of dialkyl ethers and etherified or esterified mono- or polymeric C₂-C₄-alkylene glycols, for example of di-*n*-octyl ether and dipropylene glycol *n*-butyl ether (PPG-2 Propyl Ether).

The compositions comprise hydrophobic components in amounts, based on the composition, of from 0 to 20% by weight, preferably 0.1 to 15% by weight, in particular 1 to 12% by weight, particularly preferably 2 to 10% by weight, most preferably 3 to 8% by weight, e.g. 5% by weight.

Phase-separation auxiliaries

The compositions according to the invention can comprise one or more phase-separation auxiliaries. Examples of suitable phase-separation auxiliaries are the alkali metal halides and alkaline earth metal halides, in particular chlorides, and alkali metal and alkaline earth metal sulfates and nitrates, in particular sodium chloride and potassium chloride and sodium sulfate and potassium sulfate, and also ammonium chloride and ammonium sulfate, or mixtures thereof. Being strong electrolytes which increase the ionic strength, such salts aid phase separation as a result of the salt effect. In this connection, sodium chloride has proven particularly effective. The compositions

comprise phase-separation auxiliaries in amounts, based on the composition, of from 0 to 30% by weight, preferably 1 to 20% by weight, in particular 3 to 15% by weight, most preferably 5 to 12% by weight.

5 Surprisingly, we have found that the use of acids, preferably organic acids such as carboxylic acids and/or inorganic acids, particularly preferably at least one acid chosen from the group consisting of salicylic acid, lactic acid, benzoic acid and boric
10 acid, also stabilizes phase separation of the compositions.

The addition of additional acids permits a reduction in, for example, the proportion of citric acid, where stable phase separation of the cleaner is
15 maintained.

If 13% by weight of citric acid and 9% by weight of monoethanolamine, based on the cleaner composition, are used in the presence of sodium benzoate, it is possible to obtain a phase separation
20 of the cleaner composition of about 1/3 lower phase to about 2/3 upper phase.

If lactic acid is used, for the same citric acid contents, the phase ratio of the cleaner can be adjusted to about 40 parts of lower phase and 60 parts
25 of upper phase.

By reducing the water content of the cleaner composition, the phase ratio, for a proportion of 12% by weight of citric acid and a suitable amount of monoethanolamine, can be shifted to 30 parts of upper
30 phase and 70 parts of lower phase.

If 3% by weight of sodium benzoate, 14% by weight of citric acid and 10% by weight of monoethanolamine are used, a phase ratio of the cleaner composition of 1:1 can be produced. If 3% by weight of
35 lactic acid, 13% by weight of citric acid and 12% by weight of monoethanolamine are used, the proportion of the lower phases can be increased.

Builders

Furthermore, the composition according to the invention preferably comprises one or more builders, in particular for improving the detergency. Suitable builders are, for example, alkali metal citrates, gluconates, nitrilotriacetates, carbonates and bicarbonates, in particular sodium citrate, gluconate and nitrilotriacetate, and sodium and potassium carbonate and bicarbonate, and alkali metal hydroxides and alkaline earth metal hydroxides, in particular sodium hydroxide and potassium hydroxide, ammonia and amines, in particular mono- and triethanolamine, and mixtures thereof. These also include the salts of glutaric acid, succinic acid, adipic acid, tartaric acid and benzenhexacarboxylic acid, and aminotrimethylenephosphonic acid, hydroxyethane-1,1-diphosphonic acid, 1-aminoethane-1,1-diphosphonic acid, ethylenediaminetetra(methylenephosphonic acid), diethylenetriaminepenta(methylenephosphonic acid), 2-phosphonobutane-1,2,4-tricarboxylic acid, phosphonates and phosphates, for example the sodium salts of methanediphosphonic acid, the pentasodium triphosphate, commonly known as sodium tripolyphosphate, or sodium hexametaphosphate and, for example, a mixture of condensed orthophosphates of the formula I in which n is a mean value of about 12.

Particularly preferred builders are citric acid or citrates, in particular sodium citrate, and aminotrimethylenephosphonic acid, and mixtures thereof in which the weight ratio of citric acid or citrate, based on citric acid, to aminotrimethylenephosphonic acid is preferably 1:10 to 100:1, in particular 1:1 to 40:1, particularly preferably 2:1 to 20:1, most preferably 5:1 to 10:1, for example 8:1.

If the builder is also to act as pH-stabilizing buffer, then alkali metal and alkaline earth metal carbonates and bicarbonates, preferably sodium carbonate (soda), are preferred, in particular together with citric acid or citrate, optionally generated in

situ from citric acid and hydroxide, e.g. sodium citrate or potassium citrate, particularly preferably together with the above-described mixture of citric acid or citrate and aminotrimethylenephosphonic acid.

5 Within the scope of the present invention, unless expressly stated otherwise, the citrates are the salts of the triply deprotonated citric acid. However, the mono- and dihydrogen citrates can also be used according to the invention.

10 The compositions comprise builders in amounts, based on the composition, of from 0 to 30% by weight, preferably 0.1 to 20% by weight, in particular 1 to 15% by weight, particularly preferably 3 to 12% by weight, most preferably 5 to 10% by weight, for example 7.3% by
15 weight. Here, said salts can also be used in the form of their corresponding acids or bases, which are then partially or completely neutralized depending on the pH to be established. Equally, said acids can be used in the form of their salts, preferably their alkali metal,
20 alkaline earth metal, ammonium and mono-, di- or trialkanolammonium salts, in particular mono-, di- or triethanolammonium salts, or mixtures thereof, in particular their sodium salts, for example citric acid in the form of its monohydrate citric acid·1H₂O instead
25 of citrate. The builder salts additionally act here as phase-separation auxiliaries. In particular, the complexing builders also serve to ensure a clear use solution when the compositions are used with hard water.

30 A preferred builder is citrate, optionally generated *in situ* from citric acid and hydroxide, from the group of alkali metal, alkaline earth metal, ammonium, and mono-, di- or trialkanolammonium
35 citrates, preferably mono-, di- or triethanolammonium citrates, or mixtures thereof, in particular sodium citrate and/or potassium citrate, since citrates combine builder and phase-separation auxiliary properties in a particularly advantageous manner.

5 An advantageous alkali builder is potassium hydroxide since it has a particularly positive effect on the phase separation, the clarity and color brilliance of the phases, and on the sharpness and lack of or freedom from clouding of the phase boundary layer.

Perfume oils

10 Furthermore, the composition according to the invention preferably comprises one or more perfume oils since, in addition to the fragrance effect, they aid phase separation and considerably improve detergency, in particular in amounts greater than 0.9% by weight. But the incorporation, in particular of relatively large amounts, of perfume oils into single-phase
15 aqueous solutions or stable emulsions or microemulsions frequently causes problems and renders necessary the use of solvents, solubilizers or emulsifiers without, however, being able to stabilize relatively large perfume oil contents. Here, the great advantage of the
20 form, defined as inhomogeneous, of the multiphase compositions according to the invention comes into play, which permits a stable incorporation of the perfume oils, in particular also in relatively large amounts.

25 Accordingly, the invention further provides for the use of perfume oils in a liquid multiphase cleaner having at least two continuous phases, which has at least one lower aqueous phase I and an upper aqueous or nonaqueous phase II which is immiscible with the first
30 phase and can be converted temporarily into an emulsion by shaking, for improving detergency. The composition in accordance with the use is preferably an aqueous liquid multiphase surfactant-containing cleaner comprising at least two continuous phases, which has at
35 least one lower aqueous phase I and an upper aqueous phase II which is immiscible with the first phase, in particular is a composition according to the invention.

The components of the suitable perfume oils described below are followed by numbers in brackets, e.g. "(5.0)", which are examples of information about the composition of the respective perfume oil in % by weight, based on the perfume oil. Thus, "geraniol (105.0)" means that the perfume oil may contain geraniol, for example, in an amount of 105.0% by weight.

A suitable perfume oil having a freshly fruity scent note comprises, for example, Dynascone 10 (5.0), Cyclovertal (7.5), hexyl acetate (35.0), allyl heptanoate (200.0), amyl butyrate (5.0), prenyl acetate (10.0), aldehyde C 14, so-called, (70.0), Manzanate (15.0), Melusat (30.0), ortho-tert-butylcyclohexyl acetate (200.0), cinnamaldehyde (5.0), isobornyl acetate (10.0), Dihydrofloriffone TD (2.5), Floramat (100.0), phenyl ethyl alcohol (30.0), geraniol (105.0), cyclohexyl salicylate (150.0) and citronellol (20.0).

A suitable perfume oil having a fresh floral scent note comprises, for example, bergamot oil (250.0), Messina lemon oil (50.0), citronellal (2.0), sweet orange oil (50.0), lavender oil (50.0), terpine oil (50.0), lilial (100.0), phenylethyl alcohol (80.0), citronellol (100.0), geraniol (20.0), benzyl acetate (60.0), isoraldein 70 (50.0), ylang (30.0), ambroxan 10% in IPM (1.0), heliotropin (47.0) and Habanolide (60.0).

A suitable perfume oil having a citrus scent note comprises, for example, orange oil (710.0), α -pinene (130.0), β -pinene (20.0), γ -terpinene (95.0) and Litsea cubeba oil (55.0).

The content of one or more perfume oils is usually 0.1 to 15% by weight, preferably 0.5 to 10% by weight, in particular 1 to 5% by weight, particularly preferably 1.5 to 4% by weight, most preferably 2 to 3% by weight, e.g. 2.5% by weight.

Enzymes

In a particular embodiment of the invention, the composition comprises one or more enzymes.

Suitable enzymes are those customary in detergents and cleaners, for example proteases (e.g. BLAP 260 L[®], BLAP S 260 SLD[®], BLAP S 260 ALD[®], BLAP S 260 LD[®] and BLAP S 260[®] from Biozym or Durazym[®], Savinase[®] and Alcalase[®] from Novo Nordisk), amylases (e.g. Termamyl[®] from Novo Nordisk), cellulases (e.g. KAC 500[®] from Kao, Celluzyme[®] from Novo Nordisk), lipases (e.g. Lipase 100 L[®] and Lipolase 100 T[®] from Novo Nordisk) and peroxidases and reductases.

The nonionic surfactants generally and the alkyl polyglycosides specifically improve the storage stability of the enzyme-containing variant as much as citric acid or its salts and also the hydrophobic components, in particular the optionally etherified or esterified mono- or polymeric C₂-C₄-alkylene glycols, e.g. the products sold under the trade names Dowanol[®], Arcosol[®] and Arconate[®], and polyethylene glycols and derivatives thereof. In this connection, the inventive multiphase nature of the composition has an advantageous effect on the stability of the enzymes, which is presumably attributable to the concentration of the enzymes in the upper phase II which is richer in the aforementioned stabilizing components and, in terms of ionic strength, is less ionic.

pH

The pH of the compositions according to the invention can be varied over a wide range from strongly acidic via neutral to highly alkaline, but is preferably in a range from 1 to 12, in particular 2 to 11. In this connection, the pH dependency of the antimicrobial action of the active ingredient(s) used, which is either known to the person skilled in the art or can be deduced by routine experiments, is to be taken into account. Thus, the pH is to be chosen to be as optimal as possible for the antimicrobial action of the respective antimicrobial active ingredient(s),

and/or, if a certain pH is stipulated for a certain cleaning purpose, the antimicrobial active ingredient(s) is/are to be chosen accordingly. Within the scope of the present invention, the pH of the compositions according to the invention means the pH of the composition in the form of the temporary emulsion.

In a neutral variant, the pH is from above 6 to below 8, preferably 6.5 to 7.5 and in particular about 7.

In a preferred embodiment of the invention, the compositions are rendered alkaline with a pH of from 8 to 12, preferably 8 to 11, in particular 8 to 10.5, for example between 8 and 9, e.g. 8.3, for moderate alkalinity, or above 9 to 10.5, 11 or even 12, e.g. 10, for greater alkalinity. This is particularly preferable if antimicrobial quaternary compounds are used since their antimicrobial action generally increases with increasing pH while it is occasionally completely lacking in the acid range below a pH of 3.

Suitable pH regulators are first acids, such as the mineral acids, e.g. hydrochloric acid, but in particular citric acid, and, secondly, the abovementioned alkaline builders, preferably sodium hydroxide, but in particular potassium hydroxide because of the advantages already given.

For stabilization or buffering of the pH, the composition according to the invention comprises, in a particular embodiment, small amounts of corresponding buffer substances, in the alkaline variant described, for example soda or sodium bicarbonate.

In a likewise preferred embodiment of the invention, the compositions are rendered acidic with a pH of from 1 to 6, preferably 2 to 6, in particular 3 to 5.5, particularly preferably 3.5 to 5, for example 4, 4.4 or 4.5. To set such a pH, the compositions comprise at least one acid. Inorganic acids, for example the mineral acids, e.g. hydrochloric acid, and organic acids, for example saturated or unsaturated

C₁₋₆-mono-, -di- and -tricarboxylic acids and -hydroxycarboxylic acids having one or more hydroxyl groups, e.g. citric acid, maleic acid, formic acid and acetic acid, amidosulfuric acid, C₆₋₂₂-fatty acids and anion-active sulfonic acids, and mixtures thereof, e.g. the succinic acid/glutaric acid/adipic acid mixture obtainable from BASF under the trade name *Sokalan*[®] DCS are suitable. Particularly preferred acids are citric acid, preferably used in the form of its monohydrate citric acid·1H₂O, and the anion-active sulfonic acids, and combinations of citric acid with one or more anion-active sulfonic acids, in particular with alkylarenesulfonic acids. Citric acid combines properties of acid, builder and phase-separation auxiliary in an advantageous manner, while the anion-active sulfonic acids simultaneously act as acid and anionic surfactant. Where appropriate, one or more alkalis can additionally be used, for example the alkali metal, alkaline earth metal and ammonium hydroxides and carbonates, and ammonia, preferably sodium hydroxide and potassium hydroxide, particular preference being given to potassium hydroxide.

Viscosity

The viscosity of the composition according to the invention is preferably 5 to 1000 mPa·s, in particular 10 to 500 mPa·s, particularly preferably 200 mPa·s, at 20°C, measured using a rotational viscometer from Brookfield of the LVT or LVDV-II+ type with Small Sample Adapter at a rotational rate of 30 min⁻¹, where the spindle used as measurement element according to Brookfield is to be chosen such that the moment of rotation is in a favorable range and the measurement range is not exceeded. In this connection, spindle 31 is preferred and, if necessary in cases where the viscosities are above about 240 mPa·s, recourse is preferably made to spindle 25.

Thickeners

To adjust the viscosity, the composition according to the invention can comprise one or more thickeners, preferably in an amount of from 0.01 to 5% by weight, in particular 0.05 to 2.5% by weight, particularly preferably 0.1 to 1% by weight.

Suitable thickeners are organic natural thickeners (agar agar, carragheenan, tragacanth, gum arabic, alginates, pectins, polyoses, guar flour, carob seed grain, starch, dextrans, gelatin, casein), organic modified natural substances (carboxymethylcellulose and other cellulose ethers, hydroxyethylcellulose and hydroxypropylcellulose and the like, bean flour ether), organic entirely synthetic thickeners (polyacrylic and polymethacrylic compounds, vinyl polymers, polycarboxylic acids, polyethers, polyimines, polyamides) and inorganic thickeners (polysilicic acids, clay minerals, such as montmorillonites, zeolites, silicas).

The polyacrylic and polymethacrylic compounds include, for example, the high molecular weight homopolymers of acrylic acid crosslinked with a polyalkenyl polyether, in particular an allyl ether of sucrose, pentaerythritol or propylene (*INCI* name according to the *International Dictionary of Cosmetic Ingredients* from *The Cosmetic, Toiletry, and Fragrance Association* (CTFA): Carbomer), which are also referred to as carboxyvinyl polymers. Such polyacrylic acids are available inter alia from BFGoodrich under the trade name Carbopol[®], e.g. Carbopol[®] 940 (molecular weight about 4,000,000), Carbopol[®] 941 (molecular weight about 1,250,000) or Carbopol[®] 934 (molecular weight about 3,000,000). They also include the following acrylic acid copolymers: (i) copolymers of two or more monomers from the group of acrylic acid, methacrylic acid and its monoesters formed preferably with C₁₋₄-alkanols (*INCI* Acrylates Copolymer), which include, for example, the copolymers of methacrylic acid, butyl acrylate and methyl methacrylate (CAS name according to *Chemical Abstracts Service*: 25035-69-2) or of butyl acrylate and

5 methyl methacrylate (CAS 25852-37-3) and which are available, for example, from Rohm & Haas under the trade names Aculyn[®] and Acusol[®], e.g. the anionic nonassociative polymers Aculyn[®] 33 (crosslinked), Acusol[®] 810 and Acusol[®] 830 (CAS 25852-37-3); (ii) crosslinked high molecular weight acrylic acid copolymers, which include, for example, the copolymers of C₁₀₋₃₀-alkyl acrylates, crosslinked with an allyl ether of sucrose or of pentaerythritol, with one or more monomers from the group of acrylic acid, methacrylic acid and its monoesters preferably formed with C₁₋₄-alkanols (INCI Acrylates/C10-30 Alkyl Acrylate Crosspolymer), and which are available, for example, from BFGoodrich under the trade name Carbopol[®], e.g. 10 the hydrophobicized Carbopol[®] ETD 2623 and Carbopol[®] 1382 (INCI Acrylates/C10-30 Alkyl Acrylate Crosspolymer), and Carbopol[®] AQUA 30 (formerly Carbopol[®] EX 473).

20 Preferred thickeners are the polysaccharides and heteropolysaccharides, in particular the polysaccharide gums, for example gum arabic, agar, alginates, carragheenans and their salts, guar, guaran, tragacanth, gellan, ramsan, dextran or xanthan and their derivatives, e.g. propoxylated guar, and their 25 mixtures. Other polysaccharide thickeners, such as starches or cellulose derivatives, can be used as alternatives, but are preferably used in addition to a polysaccharide gum, for example starches from a wide variety of origins and starch derivatives, e.g. 30 hydroxyethylstarch, starch phosphate esters or starch acetates, or carboxymethylcellulose or its sodium salt, methyl-, ethyl-, hydroxyethyl-, hydroxypropyl-, hydroxypropylmethyl- or hydroxyethylmethylcellulose or cellulose acetate.

35 A particularly preferred polymer is the microbial anionic heteropolysaccharide xanthan gum, which is produced by *Xanthomonas campestris* and a few other species under aerobic conditions and has a

molecular weight of from 2 to 15×10^6 , and is available, for example, from Kelco under the trade name Keltrol[®], e.g. as a cream-colored powder Keltrol[®] T (transparent) or as white granules Keltrol[®] RD (readily dispersible).

5 Auxiliaries and additives

In addition to said components, the compositions according to the invention can comprise further auxiliaries and additives, as are customary in compositions of this type. These include, in particular, polymers, soil release active ingredients, solvents (e.g. ethanol, isopropanol, glycol ethers), solubilizers, hydrotropic agents (e.g. sodium cumenesulfonate, octyl sulfate, butyl glucoside, butyl glycol), cleaning promoters, disinfectants, antistats, 15 preservatives (e.g. glutaraldehyde), bleaching systems and dyes, and opacifiers and also skin protectants, as are described in **EP-A-522 556**. The amount of such additives in the cleaner is usually no more than 12% by weight. The lower use limit depends on the type of auxiliary and additive and can, for example in the case of dyes, be up to 0.001% by weight and below. The amount of auxiliaries and additives is preferably between 0.01 and 7% by weight, in particular 0.1 and 4% by weight.

25 A preferred auxiliary and additive comprises dyes, since the addition thereof can result in the phases being colored differently, which makes it easier to see the separate phases and also to monitor emulsion formation and separation, thus making the composition even easier to handle.

30 The compositions according to the invention can be prepared by blending directly from their raw materials, subsequently mixing thoroughly and finally allowing the composition to stand for separation of the temporary emulsion. Accordingly, the invention further provides a process for the preparation of a composition according to the invention by blending directly from its raw materials, subsequently mixing thoroughly and

finally allowing the composition to stand for separation of the temporary emulsion.

5 The reversible phase separation is brought about, and its characteristics are determined, by the complex interplay of a number of components. The surfactant present can lead to phase separation according to the invention on its own. In some cases, only the additional use of hydrophobic component, builder and/or perfume effects phase separation. In
10 other cases, the use of phase-separation auxiliaries is required.

The composition according to the invention is sprayable and can therefore be used in a spray dispenser. Accordingly, the invention further provides
15 a product comprising a composition according to the invention and a spray dispenser. The spray dispenser is preferably a manually activated spray dispenser, in particular chosen from the group comprising aerosol spray dispensers, self-pressurizing spray dispensers, pump spray dispensers and trigger spray dispensers, in
20 particular pump spray dispensers and trigger spray dispensers with a container made from transparent polyethylene or polyethylene terephthalate. Spray dispensers are described in more detail in WO 96/04940 (Procter & Gamble) and the US patents cited therein
25 relating to spray dispensers, to all of which reference is made in this respect and whose contents are herewith incorporated into this application.

Particularly suitable cleaning compositions as
30 listed in Tables 2-9 can comprise Texapon SPN 70 as C₁₂-C₁₄-fatty alcohol 1,3-EO ether sulfate sodium salt, Hostapur SAS 60 as alkanesulfonate sodium salt, APG 600 UP-W as alkyl polyglycoside, Dehyton PK 45 OKA as betaine derivative and Dehydol PO 5 as fatty alcohol
35 ethoxylate.

Examples

5 The compositions **E1** to **E51** according to the invention were prepared as described above. Tables 1-9 give composition in % by weight, pH and the quantified volume ratio of the upper phase II to the lower phase I. Unless stated otherwise, the compositions **E1** to **E51** comprise water ad 100. If necessary, in the case of **E1** to **E51**, the pH can be adjusted by adding hydroxides such as NaOH and/or KOH.

10 Compositions **E1**, **E2** and **E3** comprised a perfume oil with a citrus scent note, consisting of 700.0% by weight of orange oil, 130.0% by weight of α -pinene, 20.0% by weight of β -pinene, 95.0% by weight of γ -terpinene and 55.0% by weight of Litsea Cubeba oil.

15 Analogous compositions **E1'**, **E2'** and **E3'** comprise, by contrast with the compositions **E1**, **E2** and **E3**, a perfume oil with a freshly fruity note, consisting of 5.0% by weight of Dynascone 10, 7.5% by weight of Cyclovertal, 35.0% by weight of hexyl acetate, 200.0% by weight of allyl heptanoate, 5.0% by weight of amyl butyrate, 10.0% by weight of prenyl acetate, 70.0% by weight of aldehyde C 14, so-called, 15.0% by weight of Manzanate, 30.0% by weight of Melusat, 200.0% by weight of ortho-tert-butylcyclohexyl acetate, 5.0% by weight of cinnamaldehyde, 10.0% by weight of isobornyl acetate, 2.5% by weight of dihydrofloriffone TD, 100.0% by weight of Floramat, 30.0% by weight of phenylethyl alcohol, 105.0% by weight of geraniol, 150.0% by weight of cyclohexyl salicylate and 20.0% by weight of citronellol.

30 Further analogous compositions **E1'**, **E2'** and **E3'** comprise, in contrast to the compositions **E1**, **E2** and **E3**, a perfume oil with a fresh floral scent note, consisting of 250.0% by weight of bergamot oil, 50.0% by weight of Messina lemon oil, 2.0% by weight of citronellal, 50.0% by weight of sweet orange oil, 50.0% by weight of lavender oil, 50.0% by weight of terpineol, 100.0% by weight of lilial, 80.0% by weight

of phenylethyl alcohol, 100.0% by weight of citronellol, 20.0% by weight of geraniol, 60.0% by weight of benzyl acetate, 50.0% by weight of isoraldein 70, 30.0% by weight of ylang, 1.0% by weight of Ambroxan 10% in IPM, 47.0% by weight of heliotropin and 60.0% by weight of Habanolide.

Table 1

Composition	E1	E2	E3
C ₁₂ -C ₁₆ -fatty alcohol+5.5EO	2	-	-
C ₁₂ -C ₁₈ -fatty alcohol+7EO	-	1	1
Dodecylbenzenesulfonic acid	-	3	3
Isodecanol+6EO	6.5	-	-
PPG-2 butyl ether	5.0	-	-
C ₁₁ -C ₁₃ -isoparaffins (INCI C9-13 Isoparaffin) ^[a]	-	2	2
C ₁₂ -C ₁₄ -alkylbenzyl-dimethylammonium chloride	1.5	-	-
Salicylic acid	-	0.6	0.6
Formic acid	-	1.6	-
Aminotrimethylenephosphonic acid	0.5	-	-
Citric acid·H ₂ O	4.0	3.4	8
NaOH	2.6	-	-
KOH	-	1.1	2.5
Sodium carbonate	0.2	-	-
Isopropanol	-	2	2
Perfume (see below)	2.5	1	1
Dye	<0.001 ^[b]	<0.001 ^[c]	<0.001 ^[c]
Water, demineralized	ad 100	ad 100	ad 100
pH	9.9	3.6	3.8
Appearance Phase II/Phase I	clear/ clear	clear/ clear	clear/ clear
II:I volume ratio	50:50	50:50	50:50
Color Phase II/Phase I	green/ colorless	blue/ colorless	blue/ colorless

[a] Shellsol[®] T (Shell Chemicals in Europe, DE) having a boiling range from 200 to 260°C

[b] Colour Index designation: C.I. 42080 or Acid Blue 7

[c] Colour Index designation: C.I. 61568 or Solvent Blue 104

All of the compositions had two continuous phases which temporarily formed a creamy emulsion upon shaking. Even after repeated shaking, phases separated out again upon standing.

5 The storage stability was tested by assessing the composition after storage for four weeks at room temperature of 20°C, at elevated temperature of 40°C and in the cold at a temperature of 5°C. Irrespective of the storage temperature, the composition displayed
10 no visible change, and in particular the composition could be reversibly converted into the temporary emulsion by shaking as before.

 The compositions were judged by test subjects to be visually pleasing and easy to handle and
15 achieved, in neat form and in dilute form, good cleaning results, in particular in the case of the removal of fat-containing soilings in the form of the grime caused in the kitchen as a result of the preparation of fat- or oil-containing food.

- 33 -

Table 2: 2-phase antibacterial cleaner compositions

Composition	E4	E5	E6	E7	E8	E9
% of C ₁₂ -C ₁₄ -fatty alcohol 1,3 EO ether sulfate sodium salt	16.0	16.0	16.0	16.0	16.0	16.0
% of alkanesulfonate sodium salt	8.0	8.0	8.0	8.0	8.0	8.0
% of C ₁₂₋₁₄₋₁₆ -alkyl polyglycoside	-	-	-	-	-	-
% of cocoamidopropylbetain	8.0	8.0	8.0	8.0	8.0	8.0
% of C ₈ -fatty alcohol + 5 EO	5.0	5.0	5.0	5.0	5.0	5.0
% of sodium benzoate	3.0	3.0	3.0	3.0	3.0	3.0
% of ethanol	5.0	5.0	5.0	5.0	5.0	5.0
% of n-propanol	5.0	5.0	5.0	5.0	5.0	5.0
% of dye	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
% of perfume	0.8	0.8	26.00080.8	0.8	0.8	0.8
% of citric acid 1-hydrate	8.0	9.0	10.0	11.0	12.0	13.0
% of monoethanolamine	5.0	5.9	6.5	7.7	8.0	9.1
Appearance	1.: 15 pts. color 1., clear u.: 85 pts. blue, clear	1.: 19 pts. color1., clear u.: 81 pts. blue, clear	1.: 23 pts. color1., clear u.: 77 pts. blue, clear	1.: 25 pts. color1., clear u.: 75 pts. blue, clear	1.: 25 pts. color1., clear u.: 75 pts. blue, clear	1.: 25 pts. color1., clear u.: 75 pts. blue, clear
pH	5.3	5.3	5.3	5.3	5.3	5.3

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Table 3

Composition	E10	E11	E12	E13	E14	E15
% of C ₁₂ -C ₁₄ -fatty alcohol 1,3 EO ether sulfate sodium salt	16.0	16.0	16.0	16.0	16.0	16.0
% of alkanesulfonate sodium salt	8.0	8.0	8.0	8.0	8.0	8.0
% of C ₁₂₋₁₄₋₁₆ -alkyl polyglycoside	-	-	-	-	-	-
% of cocoamidopropyl-betain	8.0	8.0	8.0	8.0	8.0	8.0
% of C ₈ -fatty alcohol + 5 EO	5.0	5.0	5.0	5.0	5.0	5.0
% of lactic acid	3.0	3.0	3.0	3.0	3.0	3.0
% of ethanol	5.0	5.0	5.0	5.0	5.0	5.0
% of n-propanol	5.0	5.0	5.0	5.0	5.0	5.0
% of dye	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
% of perfume	0.8	0.8	0.8	0.8	0.8	0.8
% of citric acid 1-hydrate	10.0	11.0	12.0	13.0	14.0	15.0
% of monoethanolamine	9.9	10.1	11.2	11.9	12.7	13.5
Appearance	1.: 15 pts. color1 '' clear u.: 85 pts. blue, clear	1.: 21 pts. color1 '' clear u.: 79 pts. blue, clear	1.: 24 pts. color1 '' clear u.: 76 pts. blue, clear	1.: 25 pts. color1 '' clear u.: 75 pts. blue, clear	1.: 25 pts. color1 '' clear u.: 75 pts. blue, clear	1.: 25 pts. color1 '' clear u.: 75 pts. blue, clear
pH	5.3	5.3	5.3	5.3	5.3	5.3

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Table 4

Composition	E16	E17	E18	E19	E20	E21
% of C ₁₂ - C ₁₄ -fatty alcohol 1,3 EO ether sulfate sodium salt	9.0	9.0	9.0	9.0	9.0	9.0
% of alkanesulfo nate sodium salt	4.5	4.5	4.5	4.5	4.5	4.5
% of C ₁₂₋₁₄ - 16-alkyl polyglycosi de	-	-	-	-	-	-
% of cocoamidopr opylbetain	4.5	4.5	4.5	4.5	4.5	4.5
% of C ₈ - fatty alcohol + 5 EO	5.0	5.0	5.0	5.0	5.0	5.0
% of sodium benzoate	3.0	3.0	3.0	3.0	3.0	3.0
% of ethanol	-	-	-	-	-	-
% of n- propanol	7.0	7.0	7.0	7.0	7.0	7.0
% of dye	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
% of perfume	0.8	0.8	0.8	0.8	0.8	0.8
% of citric acid 1-hydrate	10.0	11.0	12.0	13.0	14.0	15.0
% of monoethanol amine	7.0	7.8	8.7	9.5	10.2	11.7
Appearance	1.: 28 pts. color1 .. clear u.: 72 pts. blue, clear	1.: 33 pts. color1 .. clear u.: 67 pts. blue, clear	1.: 40 pts. color1 .. clear u.: 60 pts. blue, clear	1.: 45 pts. color1 .. clear u.: 55 pts. blue, clear	1.: 48 pts. color1 .. clear u.: 52 pts. blue, clear	1.: 50 pts. color1 .. clear u.: 50 pts. blue, clear
pH	5.3	5.3	5.3	5.3	5.3	5.3

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Table 5

Composition	E22	E23	E24	E25	E26	E27
% of C ₁₂ - C ₁₄ -fatty alcohol 1,3 EO ether sulfate sodium salt	9.0	9.0	9.0	9.0	9.0	9.0
% of alkanesulfo nate sodium salt	4.5	4.5	4.5	4.5	4.5	4.5
% of C ₁₂₋₁₄ - 16-alkyl polyglycosi de	-	-	-	-	-	-
% of cocoamidopr opylbetain	4.5	4.5	4.5	4.5	4.5	4.5
% of C ₈ - fatty alcohol + 5 EO	5.0	5.0	5.0	5.0	5.0	5.0
% of lactic acid	3.0	3.0	3.0	3.0	3.0	3.0
% of ethanol	-	-	-	-	-	-
% of n- propanol	7.0	7.0	7.0	7.0	7.0	7.0
% of dye	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
% of perfume	0.8	0.8	0.8	0.8	0.8	0.8
% of citric acid 1-hydrate	10.0	11.0	12.0	13.0	14.0	15.0
% of monoethanol amine	9.9	10.1	11.2	11.9	12.7	13.5
Appearance	1.: 36 pts. color1 ,, clear u.: 64 pts. blue, clear	1.: 43 pts. color1 ,, clear u.: 57 pts. blue, clear	1.: 50 pts. color1 ,, clear u.: 50 pts. blue, clear	1.: 55 pts. color1 ,, clear u.: 45 pts. blue, clear	1.: 55 pts. color1 ,, clear u.: 45 pts. blue, clear	1.: 55 pts. color1 ,, clear u.: 45 pts. blue, clear
pH	5.3	5.3	5.3	5.3	5.3	5.3

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Table 6

Composition	E28	E29	E30	E31	E32	E33
% of C ₁₂ - C ₁₄ -fatty alcohol 1,3 EO ether sulfate sodium salt	16.0	16.0	16.0	16.0	16.0	16.0
% of alkanesulfo nate sodium salt	-	-	-	-	-	-
% of C ₁₂₋₁₄ - 16-alkyl polyglycosi de	2.0	2.0	2.0	2.0	2.0	2.0
% of cocoamidopr opylbetain	1.5	1.5	1.5	1.5	1.5	1.5
% of C ₈ - fatty alcohol + 5 EO	5.0	5.0	5.0	5.0	5.0	5.0
% of sodium benzoate	3.0	3.0	3.0	3.0	3.0	3.0
% of ethanol	-	-	-	-	-	-
% of n- propanol	7.0	7.0	7.0	7.0	7.0	7.0
% of dye	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
% of perfume	0.8	0.8	0.8	0.8	0.8	0.8
% of citric acid 1-hydrate	10.0	11.0	12.0	13.0	14.0	15.0
% of monoethanol amine	6.8	8.0	8.5	9.1	10.5	11.0
Appearance	1.: 14 pts. color1 .. clear u.: 86 pts. blue, clear	1.: 23 pts. color1 .. clear u.: 77 pts. blue, clear	1.: 29 pts. color1 .. clear u.: 71 pts. blue, clear	1.: 33 pts. color1 .. clear u.: 67 pts. blue, clear	1.: 37 pts. color1 .. clear u.: 63 pts. blue, clear	1.: 38 pts. color1 .. clear u.: 62 pts. blue, clear
pH	5.3	5.3	5.3	5.3	5.3	5.3

Table 7

Composition	E34	E35	E36	E37	E38	E39
% of C ₁₂ - C ₁₄ -fatty alcohol 1,3 EO ether sulfate sodium salt	16.0	16.0	16.0	16.0	16.0	16.0
% of alkanesulfo nate sodium salt	-	-	-	-	-	-
% of C ₁₂₋₁₄ - 16-alkyl polyglycosi de	2.0	2.0	2.0	2.0	2.0	2.0
% of cocoamidopr opylbetain	1.5	1.5	1.5	1.5	1.5	1.5
% of C ₈ - fatty alcohol + 5 EO	5.0	5.0	5.0	5.0	5.0	5.0
% of AS lactic acid	3.0	3.0	3.0	3.0	3.0	3.0
% of ethanol	-	-	-	-	-	-
% of n- propanol	7.0	7.0	7.0	7.0	7.0	7.0
% of dye	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
% of perfume	0.8	0.8	0.8	0.8	0.8	0.8
% of citric acid 1-hydrate	10.0	11.0	12.0	13.0	14.0	15.0
% of monoethanol amine	9.4	9.9	11.1	11.7	12.5	13.4
Appearance	1.: 28 pts. color1 .. clear u.: 72 pts. blue, clear	1.: 31 pts. color1 .. clear u.: 69 pts. blue, clear	1.: 37 pts. color1 .. clear u.: 63 pts. blue, clear	1.: 40 pts. color1 .. clear u.: 60 pts. blue, clear	1.: 43 pts. color1 .. clear u.: 57 pts. blue, clear	1.: 45 pts. color1 .. clear u.: 55 pts. blue, clear
pH	5.3	5.3	5.3	5.3	5.3	5.3

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Table 8

Composition	E40	E41	E42	E43	E44	E45
% of C ₁₂ - C ₁₄ -fatty alcohol 1,3 EO ether sulfate sodium salt	10.0	10.0	10.0	10.0	10.0	10.0
% of alkanesulfo nate sodium salt	10.0	10.0	10.0	10.0	10.0	10.0
% of C ₁₂₋₁₄ - 16-alkyl polyglycosi de	4	4	4	4	4	4
% of cocoamidopr opylbetain	4	4	4	4	4	4
% of C ₈ - fatty alcohol + 5 EO	5.0	5.0	5.0	5.0	5.0	5.0
% of sodium benzoate	3.0	3.0	3.0	3.0	3.0	3.0
% of ethanol	5.0	5.0	5.0	5.0	5.0	5.0
% of n- propanol	5.0	5.0	5.0	5.0	5.0	5.0
% of dye	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
% of perfume	0.8	0.8	0.8	0.8	0.8	0.8
% of citric acid 1-hydrate	8.0	9.0	10.0	11.0	12.0	13.0
% of monoethanol amine	5.1	5.9	6.6	7.5	8.4	8.9
Appearance	1.: 13 pts. color1 .. clear u.: 87 pts. blue, clear	1.: 17 pts. color1 .. clear u.: 83 pts. blue, clear	1.: 23 pts. color1 .. clear u.: 77 pts. blue, clear	1.: 25 pts. color1 .. clear u.: 75 pts. blue, clear	1.: 27 pts. color1 .. clear u.: 73 pts. blue, clear	1.: 30 pts. color1 .. clear u.: 70 pts. blue, clear
pH	5.3	5.3	5.3	5.3	5.3	5.3

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Table 9

Composition	E46	E47	E48	E49	E50	E51
% of C ₁₂ - C ₁₄ -fatty alcohol 1,3 EO ether sulfate sodium salt	10.0	10.0	10.0	10.0	10.0	10.0
% of alkanesulfo nate sodium salt	10.0	10.0	10.0	10.0	10.0	10.0
% of C ₁₂ -14- 16-alkyl polyglycosi de	4	4	4	4	4	4
% of cocoamidopr opylbetain	4	4	4	4	4	4
% of C ₈ - fatty alcohol + 5 EO	5.0	5.0	5.0	5.0	5.0	5.0
% of AS lactic acid	3.0	3.0	3.0	3.0	3.0	3.0
% of ethanol	5.0	5.0	5.0	5.0	5.0	5.0
% of n- propanol	5.0	5.0	5.0	5.0	5.0	5.0
% of dye	0.0008	0.0008	0.0008	0.0008	0.0008	0.0008
% of perfume	0.8	0.8	0.8	0.8	0.8	0.8
% of citric acid 1-hydrate	8.0	9.0	10.0	11.0	12.0	13.0
% of monoethanol amine	7.5	8.3	8.9	9.4	10.5	11.3
Appearance	1.: 14 pts. color1 .. clear u.: 86 pts. blue, clear	1.: 22 pts. color1 .. clear u.: 78 pts. blue, clear	1.: 24 pts. color1 .. clear u.: 76 pts. blue, clear	1.: 27 pts. color1 .. clear u.: 73 pts. blue, clear	1.: 30 pts. color1 .. clear u.: 70 pts. blue, clear	1.: 30 pts. color1 .. clear u.: 70 pts. blue, clear
pH	5.3	5.3	5.3	5.3	5.3	5.3

Investigation of the antimicrobial activity

The antimicrobial activity of the compositions E1 to E51 was investigated with regard to the reduction in live microbial count in quantitative suspension test in accordance with the DIN EN 1276 test method.

The test standard DIN EN 1276 describes a test method and minimum requirement for the bactericidal action of chemical disinfectants and antiseptic products for the food sector, industry, home and public establishments. According to this, such products, under simulated contamination and under the required test conditions (test concentration 5% strength; contact time 5 minutes at 20°C), must reduce the live microbial count of the four reference strains *Staphylococcus aureus* (ATCC 6538), *Escherichia coli* (ATCC 10536), *Pseudomonas aeruginosa* (ATCC 15442) and *Enterococcus hirae* (ATCC 10541) by at least 5 powers of ten. As proof of antimicrobial action, reduction factors for the live microbial count of at least 10^5 are not required in every case and for the entire test microbial spectrum. For antimicrobial action based on the killing of test organisms, the level of significance in the case of reduction factors of at least 10^2 is to be applied, and it should not be possible to discern gaps in activity against individual relevant test microbes.

The formulation tested in each case was investigated under the contamination simulated for clean conditions (0.03% of bovine albumin). As a departure from the stipulations of DIN EN 1276, a higher microbial count of the test microbe suspension was chosen to ensure that even in the case of the use of a relatively large dilution step into the neutralization medium (1:100 instead of 1:10), a microbial count reduction around at least 5 powers of ten could certainly be established. Over and above the stipulations of the test procedure DIN EN 1276, the test mixtures, if relevant, were evaluated over

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dilution series in order to also be able to include numerically reduction factors for the live microbial count of $< 10^5$.

For example, composition **E1** under the chosen
5 test conditions was able to reduce the live microbial counts of the test organisms in *Staphylococcus aureus*, *Escherichia coli* and *Enterococcus hirae* to below the determination limit intended by the test method, which corresponds to reduction factors of $> 10^5$. Against the
10 Gram-negative test microbe *Pseudomonas aeruginosa* the composition achieved a reduction factor in the live microbial count of $4.6 \cdot 10^3$.

Under the chosen test conditions, the compositions **E2** and **E3** were able to reduce the live
15 microbial count of all four test organisms to below the determination limit provided by the test method, which corresponds to reduction factors of $> 10^5$.

Compositions E4 to E51 essentially correspond to compositions E2 and E3 in terms of their
20 antimicrobial action.

All three compositions thus exhibited significant antimicrobial action against all test microbes.

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CLAIMS

1. An aqueous liquid multiphase surfactant-containing cleaner composition having at least two
5 continuous phases, comprising at least one lower aqueous phase I and an upper aqueous phase II which is immiscible with the lower phase and which can be temporarily converted into an emulsion by shaking, which cleaner composition comprises at least one
10 antimicrobial active ingredient.
2. The composition as claimed in claim 1, which comprises at least one antimicrobial acid.
- 15 3. The composition as claimed in claim 2, wherein the acid is an organic acid.
4. The composition as claimed in claim 3, wherein the acid is selected from the group comprising
20 undecylenic acid, citric acid, lactic acid, benzoic acid, salicylic acid, formic acid and acetic acid and mixtures thereof.
5. The composition as claimed in any of claims 1
25 to 4, wherein a surface-active quaternary compound is present.
6. The composition as claimed in claim 5, wherein the surface-active quaternary compound is selected from
30 compounds containing an ammonium, sulfonium, phosphonium, iodonium or arsonium group.
7. The composition as claimed in claim 5, wherein a surface-active quaternary ammonium compound is
35 present.

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8. The composition as claimed in any claims 1 to 7, wherein the continuous phases are delimited from one another by a sharp interface.

5 9. The composition as claimed in any of claims 1 to 8, wherein one or both of the continuous phases comprise parts of the other phase in each case as dispersant based on the volume of the respective continuous phase.

10

10. The composition as claimed in claim 9, wherein the parts comprise 0.1 to 25% by volume.

11. The composition as claimed in claim 10, wherein
15 the parts comprise 0.2 to 15% by volume.

12. The composition as claimed in any of claims 1 to 11, wherein the lower phase is emulsified in the upper phase in amounts of from 0.1 to 25% by volume,
20 based on the volume of phase II.

13. The composition as claimed in claim 12, wherein the amounts are 0.2 to 15% by volume.

25 14. The composition as claimed in any of claims 1 to 13, wherein, in addition to the continuous phases, part of the two phases is in the form of an emulsion of one of the two phases in the other phase, this emulsion being delimited by two sharp interfaces, one upper and
30 one lower, and from the parts of the upper and lower phases I and II not involved in the emulsion.

15. The composition as claimed in any of claims 1 to 14, wherein phases I and II are in a volume ratio of
35 from 90:10 to 10:90.

16. The composition as claimed in claim 15, wherein the volume ratio is 75:25 to 25:75.

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17. The composition as claimed in claim 15, wherein the volume ratio is 65:35 to 35:65.

18. The composition as claimed in any of claims 1
5 to 17, wherein one or more nonionic surfactants is present.

19. The composition as claimed in claim 18, wherein the surfactants are selected from C₆-C₂₂-alkyl alcohol
10 polyglycol ethers and/or alkyl polyglycosides.

20. The composition as claimed in claim 19, wherein the surfactants are C₆-C₂₂-alkyl alcohol polyglycol ethers.

15

21. The composition as claimed in any of claims 1 to 20, which comprises one or more anionic surfactants.

22. The composition as claimed in any of claims 1
20 to 21, which is free from anionic surfactants.

23. The composition as claimed in any of claims 1 to 22, which comprises one or more amphoteric surfactants.

25

24. The composition as claimed in any of claims 1 to 23, which additionally comprises hydrophobic components from the group of dialkyl ethers having identical or different C₄- to C₁₄-alkyl radicals,
30 hydrocarbons having a boiling range from 100 to 300°C, essential oils and mixtures thereof.

25. The composition as claimed in claim 24, wherein the hydrophobic components are dioctyle ethers,
35 etherified or esterified mono- or polymeric C₂-C₄-alkyleneglycols, hydrocarbons having a boiling range of 140 to 280°C, essential oils selected from limonene and pine oil and mixtures of two or three of said components.

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26. The composition as claimed in any of claims 1 to 25, which additionally comprises one or more phase-separation auxiliaries, selected from the group of alkali metal and alkaline earth metal chlorides and sulfates, in particular sodium chloride and potassium chloride and sodium sulfate and potassium sulfate, and ammonium chloride and ammonium sulfate, or mixtures and/or acids thereof.
27. The composition as claimed in any of claims 1 to 26, which additionally comprises one or more builders from the group of alkali metal citrates, gluconates, nitrilotriacetates, carbonates and bicarbonates, and alkali metal and alkaline earth metal hydroxides, ammonia and amines, in particular mono- and triethanolamine, and mixtures thereof, in particular from the group of citric acid or citrates and aminotrimethylenephosphonic acid and mixtures thereof.
28. The composition as claimed in claim 27, which comprises citrate from the group of alkali metal citrates, alkaline earth metal citrates, ammonium citrates and mono-, di- or trialkanolammonium citrates, preferably mono-, di- or triethanolammonium citrates, or mixtures thereof, in particular sodium citrate and/or potassium citrate.
29. The composition as claimed in any of claims 1 to 28, which comprises one or more perfume oils.
30. The composition as claimed in any of claims 1 to 29, which comprises one or more enzymes.
31. A process for the preparation of a composition as claimed in any of claims 1 to 30 by blending directly from its raw materials, subsequently mixing thoroughly and finally allowing the composition to stand for separation of the temporary emulsion.

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32. A product comprising a composition as claimed in any of claims 1 to 30 in a spray dispenser.
- 5 33. The use of a composition as claimed in any of claims 1 to 30 for the cleaning and/or disinfection or sanitation of hard surfaces.