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(72) CARRILLO, LIDIA JIMENEZ, ES
(72) CRUZ, MERCEDES MENDOZA, ES
(72) HERNANDEZ, MIGUEL OSSET, ES
(71) HENKEL KOMMANDITGESELLSCHAFT AUF AKTIEN, DE

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(54) **PREPARATIONS DE PEROXYDE CONTENANT DES AZURANTS OPTIQUES STABILISES**

(54) **PEROXIDE PREPARATIONS CONTAINING STABILIZED OPTICAL BRIGHTENERS**

(57) The present invention relates to peroxide preparations containing optical brighteners which are distinguished by the fact that the optical brighteners are present in microencapsulated form.

Abstract

The present invention relates to peroxide preparations containing optical brighteners which are distinguished by the fact that the optical brighteners are present in microencapsulated form.

Peroxide Preparations Containing Stabilized Optical Brighteners

Field of the Invention

This invention relates generally to bleaching agents and disinfectants and, more particularly, to peroxide preparations containing optical brighteners in microencapsulated form.

Prior Art

In Mediterranean countries and also in the United States, cold water is still predominantly used for washing laundry. The effect of this is that conventional bleaching agents, for example perborates or percarbonates, are hardly used because they do not develop any particular activity at temperatures around 20°C. For this reason, liquid bleaches - generally surface-active preparations containing up to 10% by weight of hydrogen peroxide - are normally added to the wash liquor.

To counteract the yellowing of laundry, optical brighteners are added to the bleaching compositions. These auxiliaries are absorbed onto the fibers and convert invisible UV radiation into visible longer-wave light. The ultraviolet light absorbed from sunlight is re-emitted in the form of pale bluish fluorescence, i.e. in the complementary color to the yellowing. The optical brighteners used are generally dyes which are readily oxidized in a peroxide-containing environment and, as a result, lose their properties. Accordingly, bleaching liquors containing these whiteners have only a limited shelf life so far as the performance of this component is concerned. The object of the present invention was to find a simple technical solution to the problem described above.

Description of the Invention

The present invention relates to peroxide preparations containing optical brighteners which are characterized in that the optical brighteners are present in microencapsulated form.

It has surprisingly been found that peroxide-containing textile bleaching preparations can be formulated with optical brighteners when the optical brighteners are used in microencapsulated form. The micro-capsules are chemically and physically, more particularly spatially, stable in the liquid preparations according to the invention, i.e. the microcapsules do not undergo decomposition or sedimentation in the preparations. In this way, peroxide-containing preparations can be produced with a virtually free choice of optical brighteners.

Peroxide compounds

Peroxide compounds in the context of the invention are understood to be substances wich contain an O-O-group. Typical examples are perborates, percarbonates, percarboxylic acids and, in particular, hydrogen peroxide. The aqueous preparations according to the invention preferably contain hydrogen peroxide in quantities of 1 to 10% by weight, preferably in quantities of 5 to 8% by weight and more preferably in quantities of 6 to 7% by weight, based on 100% active substance. The hydrogen peroxide is used, for example, in the form of a 35% by aqueous solution.

Microcapsules

"Microcapsules" are understood to be aggregates which contain at least one solid or liquid core surrounded by at least one continuous shell, more particularly a shell of polymer(s). They are normally finely dispersed liquid or solid phases coated with film-forming polymers, in the production of which the polymers are deposited onto the material to be encapsulated after emulsification and coacervation or interfacial polymerization. The microscopically small capsules, also known as nanocapsules, can be dried in the same way as powders. Besides single-core microcapsules, there are also multiple-core aggregates, also known as microspheres, which contain two or more cores distributed in the continuous shell material. In

addition, single-core or multiple-core microcapsules may be surrounded by an additional second, third etc. shell. Single-core microcapsules with a continuous shell are preferred. The shell may consist of natural, semisynthetic or synthetic materials. Natural shell materials are, for example, gum arabic, agar agar, agarose, maltodextrins, alginic acid and salts thereof, for example sodium or calcium alginate, fats and fatty acids, cetyl alcohol, collagen, chitosan, lecithins, gelatin, albumin, shellac, polysaccharides, such as starch or dextran, sucrose and waxes. Semisynthetic shell materials are inter alia chemically modified celluloses, more particularly cellulose esters and ethers, for example cellulose acetate, ethyl cellulose, hydroxypropyl cellulose, hydroxypropyl methyl cellulose and carboxymethyl cellulose, and starch derivatives, more particularly starch ethers and esters. Synthetic shell materials are, for example, polymers, such as polyacrylates, polyamides, polyvinyl alcohol or polyvinyl pyrrolidone.

Although they may be produced in any shape, the microcapsules are preferably substantially spherical. Their diameter along their largest spatial dimension may be between 10 nm (visually not discernible as a capsule) and 10 mm, depending on the optical brighteners present in their interior and the application envisaged. Visible microcapsules between 0.1 mm and 7 mm and, more particularly, between 0.4 mm and 5 mm are preferred. Microcapsules invisible to the naked eye preferably have a diameter of 20 to 500 nm and more preferably 50 to 200 nm. The microcapsules may be obtained by known processes, of which coacervation and interfacial polymerization are the most important. Any commercially available surfactant-stable microcapsules may be used as the microcapsules, including for example the commercial products (the shell material is shown in brackets) *Hallcrest Microcapsules* (gelatin, gum arabic), *Coletica Thalaspheres* (maritime collagen), *Lipotex Millicapseln* (alginic acid, agar agar), *Induchem Unispheres* (lactose, microcrystalline

cellulose, hydroxypropylmethyl cellulose), *Unicerin C30* (lactose, microcrystalline cellulose, hydroxypropylmethyl cellulose), *Kobo Glycospheres* (modified starch, fatty acid esters, phospholipids), *Softspheres* (modified agar agar) and *Kuhs Probiol Nanospheres* (phospholipids).

The active substances are released from the microcapsules by mechanical, thermal, chemical or enzymatic destruction of the shell, normally during the use of the preparations containing the microcapsules. In the case of the bleaching agents normally used in undiluted form, they are preferably released by mechanical action, more particularly by mechanical forces to which the microcapsules are exposed during dosing, pump-circulation or spinning in the washing machine. In one preferred embodiment of the invention, the preparations contain the same microcapsules or different microcapsules in quantities of 0.1 to 10% by weight, more preferably in quantities of 0.2 to 8% by weight and most preferably in quantities of 0.5 to 6% by weight.

Optical brighteners

The optical brighteners which are used in microencapsulated form in accordance with the present invention are preferably those which are otherwise unstable in peroxide-containing preparations. Typical examples of suitable optical brighteners are derivatives of diaminostilbene disulfonic acid and alkali metal salts thereof. Suitable optical brighteners are, for example, derivatives of 4,4'-diamino-2,2'-stilbene disulfonic acid (flavonic acid), such as in particular the salts of 4,4'-bis-(2-anilino-4-morpholino-1,3,5-triazinyl-6-amino)-stillbene-2,2'-disulfonic acid or compounds of similar structure which, instead of the morpholino group, contain a diethanolamino group, a methylamino group, an anilino group or a 2-methoxyethylamino group. Other brighteners which may be present are those of the substituted diphenyl styryl type, for example alkali metal salts of 4,4'-bis-(2-sulfostyryl)-diphenyl, 4,4'-bis-(4-chloro-2-sulfostyryl)-diphenyl

or 4-(4-chlorostyryl)-4'-(2-sulfostyryl)-diphenyl, methyl umbelliferone, coumarin, dihydroquinolinone, 1,3-diaryl pyrazoline, naphthalic acid amide, benzoxazole, benzisoxazole and benzimidazole systems linked by CH=CH bonds, heterocycle-substituted pyrine derivatives and the like. Mixtures of the brighteners mentioned above may also be used. The potassium salt of 4,4'-bis-(1,2,3-triazolyl)-(2)-stilbine-2,2-sulfonic acid marketed under the name of Phorwite® BHC 766 is preferred. The microcapsules generally contain the optical brighteners in quantities of 1 to 75% by weight, preferably in quantities of 10 to 60% by weight and more preferably in quantities of 25 to 50% by weight, based on the weight of the capsules. In addition, it is of advantage if, besides the usual brighteners in the usual quantities, for example between 1 and 5% by weight and preferably between 2 and 3% by weight, the microcapsules also contain small quantities of a blue dye. Particularly preferred brighteners or dyes are naphthotriazole stilbene sulfonic acid, for example in the form of its sodium salt (Tinopal® RBS 200) and tetrabenzotetraazaporphine (Tinolux® BBS), distyryl bisphenyl bis-(triazinylamino)-stilbene disulfonic acid (Tinopal® CDS-X) and, in particular, 4,4'-bis-(2-sulfostyrene)-biphenyl disodium salt (Tinopal® CBS-X, products of Ciba).

<u>Sequestering agents</u>

If the preparations are used for treating fabrics, it is advisable to add to them electrolytes which act as sequestrants for heavy metal ions and which therefore counteract yellowing of the fabrics. Suitable sequestering agents are, for example, silicates, phosphonic acids and phosphonates, polyacrylic acid compounds, alkali metal carbonates, such as sodium carbonate, lignin sulfonates and mixtures of the electrolytes mentioned. A particularly preferred sequestrant is the methylglycine diacetic acid trisodium salt marked by BASF as Trilon® M. The total quantity of sequestrant used is normally 0.1 to 2% by weight, preferably 0.3 to 1.5%

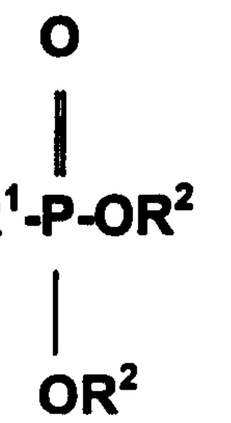
by weight and more preferably 0.5 to 1.0% by weight, based on the preparation.

Silicates in the context of the invention are understood to be salts and esters of orthosilicic acid $Si(OH)_4$ and self-condensation products thereof. Accordingly, the following crystalline substances, for example, may be used as silicates:

(a) neosilicates (island silicates) such as, for example, phenakite, olivine and zircon;
(b) sorosilicates (group silicates) such as, for example, thortveitite and hemimorphite;
(c) cyclosilicates (ring silicates) such as, for example, benitoite, axinite, beryl, milarite, osumilite or eudialyte;
(d) inosilicates (chain and band silicates) such as, for example, metasilicates (for example diopside) or amphiboles (for example tremolite);
(e) phyllosilicates (sheet and layer silicates) such as, for example, talc, kaolinite and mica (for example muscovite);
(f) tectosilicates (framework silicates) such as, for example, feldspars and zeolites and clathrasils or dodecasils (for example melanophlogite), thaumasite and neptunite.

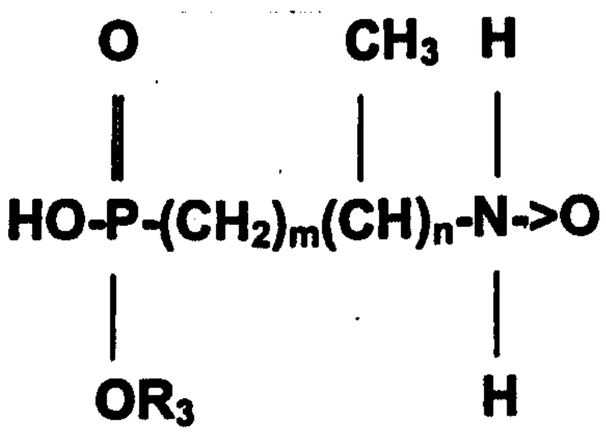
In contrast to the ordered crystalline silicates, silicate glasses such as, for example, soda waterglass or potash waterglass are preferably used. These silicate glasses may be of natural origin (for example montmorillonite) or may have been produced by a synthetic route. In another embodiment of the invention, alumosilicates may also be used. Typical examples of alkali metal or alkaline earth metal silicates are sodium and/or potassium silicates with a modulus of 1.0 to 3.0 and preferably 1.5 to 2.0.

Phosphonic acids in the context of the invention are understood to be organic derivatives of the acid $HP(O)(OH)_2$; **phosphonates** represent the salts and esters of these phosphonic acids. The organic phosphonic acids and phosphonates preferably used are known chemical compounds which may be prepared, for example, by the Michaelis-Arbuzov reaction. They correspond, for example, to formula (I):



(I)

in which R^1 is an optionally substituted alkyl and/or alkenyl group containing 1 to 22 carbon atoms, preferably 2 to 18 carbon atoms and more preferably 6 to 12 carbon atoms and R^2 is hydrogen, an alkali metal and/or alkaline earth metal, ammonium, alkylammonium and/or alkanol-ammonium or an optionally substituted alkyl and/or alkenyl group containing 1 to 22, preferably 2 to 18 and more preferably 6 to 12 carbon atoms. Typical examples are optionally hydroxy-, nitrilo- and/or amino-substituted phosphonic acids such as, for example, ethyl phosphonic acid, nitrilotris-(methylenephosphonic acid), 1-amino- and 1-hydroxyalkane-1,1-diphosphonic acids. One preferred embodiment of the invention is characterized by the use of amine oxide phosphonic acids corresponding to formula (II):



(II)

in which R^3 is hydrogen, a $(CH_2)_m(CHCH_3)_nNH_2O$ group or an alkali metal, m is a number of 1 to 4 and n has a value of 0 or 1. Amine oxide

phosphonic acids are builders or sequestrants which are marketed, for example, by Bozetto (Italy) under the name of Sequion®. They are produced by reacting aminophosphonic acids to form the amine oxide. According to the invention, both mono- and diamine oxides in the form of the phosphonic acids (or salts) corresponding to formula **(II)** may be used. Amine oxide phosphonic acids in which R^3 is hydrogen, m = 3 and n = 0 (amine oxide based on aminotrimethylene phosphonic acid) are preferably used.

Polyacrylic acid compounds suitable as sequestrants are in particular the low molecular weight homopolymers of acrylic acid and methacrylic acid and esters thereof as opposed to the high molecular weight representatives suitable as thickeners. Besides the acids, esters of the acids with alcohols containing 1 to 4 carbon atoms may also be polymerized. Polyacrylic acid compounds having a particularly advantageous stabilizing effect are present as alkali metal salts and have an average molecular weight in the range from 1,000 to 10,000 dalton and more particularly in the range from 4,000 to 6,000 dalton.

Surfactants

To support their cleaning performance, the preparations may additionally contain peroxide-stable surfactants such as, for example, fatty acid salts, alkyl sulfates, alkyl sulfonates, alkyl benzenesulfonates, xylene sulfonates, sarcosinates, taurides, isethionates, sulfosuccinates, betaines, sugar esters and fatty acid-N-alkyl glucamides. However, alkyl ether sulfates, amine oxides, alk(en)yl oligoglycosides and fatty acid polyglycol ethers are preferably used. The surfactants together generally make up from 1 to 15% by weight and preferably from 5 to 10% by weight of the preparations.

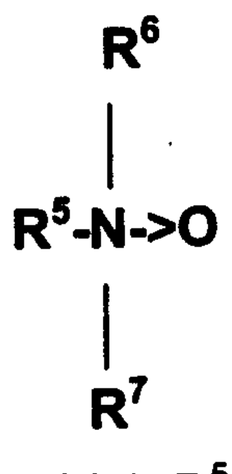
Alkyl ether sulfates are anionic surfactants which may be obtained by sulfation of alkyl polyglycol ethers and subsequent neutralization. Alkyl

ether sulfates suitable for use in accordance with the invention correspond to formula (III):

$$R^4O\text{-}(CH_2CH_2O)_nSO_3X \qquad \text{(III)}$$

in which R^4 is an alkyl group containing 12 to 18 and, more particularly, 12 to 14 carbon atoms, n is a number of 2 to 5 and, more particularly, 2 to 3 and X stands for sodium or potassium. Typical examples are the sodium salts of sulfates of the $C_{12/14}$ cocoalcohol +2, +2.3 and +3 EO adduct. The alkyl ether sulfates may have a conventional or narrow homolog distribution. The alkyl ether sulfates are preferably used in quantities of 1 to 8% by weight, preferably 1.5 to 6% by weight and more preferably 2 to 4% by weight, based on the preparation.

Amine oxides are also known compounds which are occasionally classified as cationic surfactants, but generally as nonionic surfactants. They are produced by oxidation of tertiary fatty amines, which normally have either one long and two short alkyl chains or two short and one long alkyl chain, in the presence of hydrogen peroxide. The amine oxides suitable as surface-active ingredients in accordance with the present invention correspond to formula (IV):



(IV)

in which R^5 is a linear or branched alkyl group containing 12 to 18 carbon atoms and R^6 and R^7 independently of one another have the same meaning as R^5 or represent an optionally hydroxysubstituted alkyl group containing 1 to 4 carbon atoms. Amine oxides corresponding to formula

(IV) in which R^5 and R^6 represent $C_{12/14}$ or $C_{12/18}$ cocoalkyl groups and R^7 represents a methyl group or a hydroxyethyl group, are preferably used. Amine oxides corresponding to formula **(IV)**, in which R^5 represents a $C_{12/14}$ or $C_{12/18}$ cocoalkyl group and R^6 and R^7 represent a methyl or hydroxyethyl group, are also preferred. The amine oxides are preferably used in quantities of 1.5 to 6% by weight and preferably 2 to 4% by weight, based on the preparation.

Alkyl and alkenyl oligoglycosides are known nonionic surfactants which correspond to formula **(V)**:

$$R^8O\text{-}[G]_p \qquad \textbf{(V)}$$

in which R^8 is an alkyl and/or alkenyl radical containing 4 to 22 carbon atoms, G is a sugar unit containing 5 or 6 carbon atoms and p is a number of 1 to 10. The alkyl and/or alkenyl oligoglycosides, which are also suitable as surface-active ingredient, may be derived from aldoses or ketoses containing 5 or 6 carbon atoms, preferably glucose. Accordingly, the preferred alkyl and/or alkenyl oligoglycosides are alkyl and/or alkenyl oligo**glucosides**. The index p in general formula **(V)** indicates the degree of oligomerization (DP), i.e. the distribution of mono- and oligoglycosides, and is a number of 1 to 10. Whereas p in a given compound must always be an integer and, above all, may assume a value of 1 to 6, the value p for a certain alkyl oligoglycoside is an analytically determined calculated quantity which is generally a broken number. Alkyl and/or alkenyl oligoglycosides having an average degree of oligomerization p of 1.1 to 3.0 are preferably used. Alkyl and/or alkenyl oligoglycosides having a degree of oligomerization of less than 1.7 and, more particularly, between 1.2 and 1.4 are preferred from the applicational point of view. The alkyl or alkenyl radical R^8 may be derived from primary alcohols containing 4 to 11 and preferably 8 to 10 carbon atoms. Typical examples are butanol, caproic

alcohol, caprylic alcohol, capric alcohol and undecyl alcohol and the technical mixtures thereof obtained, for example, in the hydrogenation of technical fatty acid methyl esters or in the hydrogenation of aldehydes from Roelen's oxosynthesis. Alkyl oligoglucosides having a chain length of C_8 to C_{10} (DP = 1 to 3), which are obtained as first runnings in the separation of technical C_{8-18} coconut oil fatty alcohol by distillation and which may contain less than 6% by weight of C_{12} alcohol as an impurity, and also alkyl oligoglucosides based on technical $C_{9/11}$ oxoalcohols (DP = 1 to 3) are preferred. In addition, the alkyl or alkenyl radical R^8 may also be derived from primary alcohols containing 12 to 22 and preferably 12 to 14 carbon atoms. Typical examples are lauryl alcohol, myristyl alcohol, cetyl alcohol, palmitoleyl alcohol, stearyl alcohol, isostearyl alcohol, oleyl alcohol, elaidyl alcohol, petroselinyl alcohol, arachyl alcohol, gadoleyl alcohol, behenyl alcohol, erucyl alcohol, brassidyl alcohol and technical mixtures thereof which may be obtained as described above. Alkyl oligoglucosides based on hydrogenated $C_{12/14}$ cocoalcohol with a DP of 1 to 3 are preferred. The glycosides are preferably used in quantities of 1.5 to 6% by weight and more preferably in quantities of 2 to 4% by weight, based on the preparation.

The preparations according to the invention may contain as further surfactants **fatty alcohol polyglycol ethers** corresponding to formula (VI): acid salts corresponding to formula **(VI):**

$$R^9O(CH_2CH_2O)_nH \qquad \textbf{(VI)}$$

in which R^9 is a linear or branched alkyl and/or alkenyl group containing 6 to 22 and preferably 12 to 18 carbon atoms and n is a number of 1 to 10. Typical examples are products of the addition of on average 1 to 10 and preferably 2 to 5 moles of ethylene oxide onto caproic alcohol, caprylic alcohol, 2-ethylhexyl alcohol, capric alcohol, lauryl alcohol, isotridecyl

alcohol, myristyl alcohol, cetyl alcohol, palmitoleyl alcohol, stearyl alcohol, isostearyl alcohol, oleyl alcohol, elaidyl alcohol, petroselinyl alcohol, linolyl alcohol, linolenyl alcohol, elaeostearyl alcohol, arachyl alcohol, gadoleyl alcohol, behenyl alcohol, erucyl alcohol and brassidyl alcohol and the technical mixtures thereof obtained, for example, in the high-pressure hydrogenation of technical methyl esters based on fats and oils or aldehyde from Roelen's oxosynthesis and as monomer fraction in the dimerization of unsaturated fatty alcohols. Products of the addition of 2 to 5 moles of ethylene oxide onto technical fatty alcohols containing 12 to 18 carbon atoms such as, for example, cocofatty alcohol, palm oil fatty alcohol, palm kernel oil fatty alcohol and tallow fatty alcohol are preferred. The polyglycol ethers may have a conventional broad homolog distribution, but also a narrow homolog distribution (NRE, narrow range ethoxylates). Mixtures of fatty alcohol polyglycol ethers with a linear and branched alkyl chain have proved to be advantageous by virtue of their favorable thickening effect. In addition, particularly high-performance preparations contain mixtures of various fatty alcohol polyglycol ethers in which one component has an HLB value above 10 and the other an HLB value below 10. The polyglycol ethers are used in quantities of preferably 1 to 5% by weight and more preferably 2 to 4% by weight, based on the preparation.

<u>Thickeners</u>

The use of electrolytes is a very simple and inexpensive method of adjusting viscosity. However, it has been found that the presence of chloride ions besides peroxide can cause pitting on certain textile through the formation of chlorine. In one preferred embodiment of the invention, therefore, organic thickeners are used. Organic thickeners are, for example, polysaccharides, more particularly xanthan gum, guar guar, agar agar, alginates and tyloses, carboxymethyl cellulose and hydroxyethyl cellulose, also relatively high molecular weight polyethylene glycol monoesters and diesters of fatty acids, polyacrylates (for example

Carbopols® [Goodrich] or Synthalens® [Sigma]), polyacrylamides, polyvinyl alcohol and polyvinyl pyrrolidone, aluminas such as, for example, Laponite® of Southern Clay Products or Zeothix® of Huber, surfactants such as, for example, ethoxylated fatty acid glycerides, esters of fatty acids with polyols such as, for example, pentaerythritol or trimethylol propane, narrow-range fatty alcohol ethoxylates or alkyl oligoglucosides, which may be added to the preparations in quantities of 0.1 to 5% by weight and, more particularly, in quantities of 0.1 to 2% by weight.

Commercial Applications

The preparations according to the invention are generally aqueous with a non-aqueous component of, preferably, 5 to 35% by weight and, more preferably, 8 to 15% by weight and are particularly suitable for the treatment of flat textile materials such as, for example, yarns, fabric webs and, in particular, textiles. They are normally used at low temperatures, i.e. at cold-wash temperatures (ca. 15 to 25°C). Not only are the preparations distinguished by excellent stain removal, they also reliably prevent the deposition of lime and metal traces on the fibers and thus also prevent incrustation and yellowing. Although the actual use of the preparations is directed to the removal of stains during washing, they are also suitable in principle for other applications in which bleaching solutions are used, for example for the cleaning and disinfection of hard surfaces.

The preparations according to the invention may additionally contain fragrances, dyes and pigments in total quantities of 0.01 to 0.5% by weight, based on the preparation. Typical examples of suitable peroxide-stable perfumes are: citronellol (3,7-dimethyl-6-octen-1-ol), dimethyl octanol (3,7-dimethyl-1-octanol), hydroxycitronellol (3,7-dimethyloctane-1,7-diol), mugol (3,7-dimethyl-4,6-octatrien-3-ol), myrcenol (2-methyl-6-methylene-7-octen-2-ol), terpinolene (p-mentho-1,4-(8)-diene), ethyl-2-methyl butyrate, phenyl propyl alcohol, galaxolide (1,3,4,6,7,8-hexahydro-4,6,6,7,8,8-hexamethyl

cyclopental-2-benzopyran), tonalide (7-acetyl-1,1,3,4,4,6-hexamethyl tetrahydronaphthalene), rose oxide, linalol oxide, 2,6-dimethyl-3-octanol, tetrahydroethyl linalool, tetrahydroethyl linalyl acetate, o-sec.-butyl cyclohexyl acetate and isolone diphorenepoxide and also isoborneal, dihydroterpineol, isobornyl acetate, dihydroterpenyl acetate). Other suitable perfumes are the substances mentioned columns 3 and 4 of European patent application **EP 0622451 A1** (Procter & Gamble). Suitable pigments are inter alia green chlorophthalocyanines (Pigmosol® Green, Hostaphine® Green) or yellow Solar Yellow BG 300 (Sandoz). The preparations may also contain typical auxiliaries and additives, for example antioxidants, such as phenols and phenol derivatives, for example butyl hydroxytoluene (BHT, 2,6-ditert.-butyl-4-methylphenol). The preparations according to the invention are prepared by stirring. The product obtained may optionally be decanted or filtered to remove foreign bodies and/or agglomerates. In addition, the preparations have a viscosity above 100 and preferably above 200 mPas, as measured at 20°C in a Brookfield viscosimeter (spindle 1, 10 r.p.m.).

Examples

On the one hand Tinopal® CBS-X capsules and on the other hand the pure optical brightener were added to various hypochlorite solutions which were then introduced into dark bottles and stored at 25°C. Quantities of 100 ml of the solutions were visually evaluated immediately after their preparation and after storage for 2 weeks and 4 weeks, subsequently poured into glass beakers and then treated for 1 minute with a magnetic stirrer on a low-speed setting. Soiled fabrics were then treated with the bleaching solutions. The yellowing of the fabrics was photometrically determined, the starting value of the soiled fabrics serving as standard (100%). The water hardness of the liquor was 1000 ppm $CaCl_2$, the hydrogen carbonate content 0.013% by weight. The liquor ratio (fabric: water) was 1:50, the contact time was 30 mins. at a temperature of 40°C. In addition, the washing performance was photometrically determined against a white standard. The results are set out in Table 1. Examples 1 to 3 correspond to the invention while Examples C1 to C3 are intended for comparison.

Table 1

Composition of the bleaching agents, textile yellowing and washing performance

Composition	1	2	3	C1	C2	C3
Hydrogen peroxide	7.5	7.5	7.5	7.5	7.5	7.5
Cocofatty alcohol +2EO sulfate TEA salt	0.75	2.0	2.0	0.75	2.0	2.0
$C_{12/14}$ cocofatty alcohol+6EO	8.5	-	-	8.5	-	-
$C_{12/14}$ cocofatty alcohol+4EO	0.75	-	-	0.75	-	-
$C_{12/14}$ cocofatty alcohol+2.5EO (NRE)	-	0.7	0.7	-	-	-
Xanthan gum[0)]	-	-	0.7	-	-	0.7
Polyacrylate[1)]	-	1.0	-	-	1.0	-
Trilon®M[2)]	0.1	0.1	0.1	0.1	0.1	0.1
Microcapsules (Lipotec)[3)]	0.3	0.3	0.3	-	-	-
Tinopal® CBS-X	-	-	-	0.3	0.3	0.3
EtOH	0.19	0.19	0.19	0.19	0.19	0.19
Butylhydroxy-toluene[4)]	0.01	0.01	0.01	0.01	0.01	0.01
Dye[5)]	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Water	to 100					
Yellowing [%-rel]						
-immediately	71	70	71	65	65	-
-after storage for 2 weeks	72	72	73	75	78	-
-after storage for 4 weeks	74	75	75	86	89	-
Washing performance [-refl.]						
-immediately	83.5	75.1	74.3	78.5	73.2	72.6
Optical impression	homo-geneous	homo-geneous	homo-geneous	clear	clear	clear

[0)] Keltrol® T (Kelco); [1)] Carbopol 497 (Goodrich); [2)] methylglycine diacetic acid trisodium salt (BASF); [3)] filling, 90% by weightTinopal® CBS-X (4,4'-bis-(2-sulfostyryl)-biphenyl disodium salt), shell material: sodium alginate; [4)] 2,6-di-tert.butyl-4-methylphenol; [5)] Pigmosol® Blue 6900 = water-dispersible copper phthalocyanine preparation = Pigment Blue 15 = C.I. 74160 (BASF)

The preparations according to the invention containing the microencapsulated optical brightener are homogeneous even after storage for 4 weeks, i.e. the capsules have not sedimented. Whereas the comparison formulations, despite their 30% higher Tinopal® CBS-X content, have a distinctly reduced performance after only 2 weeks due to the chemical decomposition of the optical brightener, an adequate quantity of optical brightener is released, even after storage, when the preparations according to the invention are exposed to a mechanical load. Accordingly, the microencapsulation is suitable for preventing chemical decomposition.

CLAIMS

1. Peroxide preparations containing optical brighteners, characterized in that the optical brighteners are present in microencapsulated form.

2. Preparations as claimed in claim 1, characterized in that they contain 0.5 to 10% by weight, based on the preparation, of hydrogen peroxide.

3. Preparations as claimed in claims 1 and/or 2, characterized in that they contain 0.1 to 10% by weight, based on the preparation, of microcapsules containing optical brighteners.

4. Preparations as claimed in at least one of claims 1 to 3, characterized in that they contain microcapsules of which the shell substance is selected from the group consisting of gum arabic, agar agar, agarose, maltodextrins, alginic acid, alginates, fats and fatty acids, cetyl alcohol, collagen, chitosan, lecithin, gelatin, albumin, shellac, polysaccharides, celluloses, cellulose esters, cellulose ethers, starch ethers, starch esters, polyacrylates, polyamides, polyvinyl alcohols and polyvinyl pyrrolidone.

5. Preparations as claimed in at least one of claims 1 to 4, characterized in that they contain microcapsules of which the diameter along their largest spatial dimension is 0.01 to 10,000 µm.

6. Preparations as claimed in at least one of claims 1 to 5, characterized in that they contain microcapsules which contain 1 to 95% by weight, based on the weight of the capsules, of optical brighteners.

7. Preparations as claimed in at least one of claims 1 to 6, characterized in that they additionally contain sequestrants.

8. Preparations as claimed in at least one of claims 1 to 7, characterized in that they additionally contain surfactants.

9. Preparations as claimed in at least one of claims 1 to 8, characterized in that they additionally contain organic thickeners.

10. Preparations as claimed in at least one of claims 1 to 9, characterized in that they have a Brookfield viscosity above 100 mPas.