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(54) **Use of hypochlorite comprising compositions having an improved skin mildness**

Verwendung von hypochlorithaltigen Zusammensetzungen mit verbesserter Hautschonung

Utilisation des compositions d'hypochlorite ayant une douceur améliorée de la peau

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(56) References cited:
EP-A- 0 021 581 **EP-A- 0 554 991**
US-A- 4 789 495

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DescriptionField of the Invention

5 **[0001]** The present invention is related to improve the skin mildness of hypochlorite-based compositions.

Background of the Invention

10 **[0002]** It is highly desirable to incorporate hypochlorite in detergent compositions for bleaching. However, hypochlorite is an irritant and many consumers suffer from skin irritation when using such compositions.

[0003] Particularly, the hands of the user are prone to such irritation. As a result of coming into contact with such compositions the hands suffer from dryness and from a feeling of tightness. This occurs when the compositions are used neat and also when used in diluted form.

15 **[0004]** It is believed that hypochlorite attacks the uppermost layer of the epidermal of the skin. This results in the decrease of the elasticity of the skin. The skin also becomes more sensitive, resulting in dryness and coarseness of the skin. In addition the skin may become inflamed and become red and sore and itchy. These effects are magnified in alkaline conditions, because alkali is also an irritant. Alkalinity is required for hypochlorite stability and it thus the preferred condition for hypochlorite-comprising compositions. However, alkaline conditions contribute to skin tightening because it alters the natural pH of the skin.

20 **[0005]** The object of the present invention is to improve skin mildness and reduce skin irritation of hypochlorite-comprising compositions.

[0006] The present invention overcomes these problems by the use of the combination of amine oxides and specific alkyl sulphates in hypochlorite-comprising compositions. It is believed that this surfactant combination wets the skin and provides a protective layer against hypochlorite and alkalinity on the skin.

25 **[0007]** Amine oxides and alkyl sulphates are known in the art. US 4 282 109 discloses a thickened bleach composition comprising hypochlorite and a thickening amount of a surfactant blend, comprising amine oxide C₁₀-C₁₈ and alkyl sulphate C₈-C₁₂. There is no mention of the reduction of hypochlorite related skin irritation of these compositions.

30 **[0008]** EP 274 885 discloses thickened bleaching compositions comprising alkali metal hypochlorite and straight chain C₁₄ amine oxide with a mixture of branched and straight chain C₁₅ amine oxide. There is no mention of short chain surfactants or the reduction of hypochlorite related skin irritation.

[0009] EP 233 666 discloses a process for the manufacture of a thickened bleaching compositions comprising hypochlorite, a hypochlorite-soluble surfactant, including amine oxide and an alkali metal salt of a fatty acid. There is no mention of the reduction of hypochlorite related skin irritation.

35 **[0010]** DE 28 37 880 covers bleaching compositions comprising alkali metal hypochlorite and mixtures of branched and linear amine oxides of varying chain length, (C₅-C₁₇) for increased viscosity. There is no mention of other long or short chain surfactants or the reduction of hypochlorite skin irritation.

40 **[0011]** EP 30 401 covers thickened bleaching compositions comprising hypochlorite and a certain number of product characteristics including pH and viscosity. Mixtures of C₈-C₁₈ amine oxides and fatty acids are preferred as thickening agents. No other surfactants are disclosed. There is also no mention of reducing the irritation effects due to the hypochlorite.

[0012] European application EP-A-635568 and WO95/03383 disclose short chain surfactants.

Summary of the Invention

45 **[0013]** The present invention is the use of the combination of 1-5% amine oxide with 1-8% alkyl sulphate to improve skin mildness of hypochlorite-comprising compositions comprising 0,4-5% hypochlorite. Said amine oxide is according to the formula R₁R₂R₃NO, wherein R₁ is a C₈ to C₁₈ alkyl group and R₂ and R₃ are independently C₁ to C₃ alkyl groups. Said alkyl sulphate is according to the formula R₄OSO₃H, wherein R₄ is a C₆ to C₁₀ alkyl group.

50 **[0014]** All amounts, ratios, percentages and parts herein are given as a % weight of the total composition unless otherwise stated.

Detailed Description of the Invention

55 **[0015]** The present invention is the use of the combination of an amine oxide and an alkyl sulphate to improve skin mildness of hypochlorite-comprising compositions.

[0016] Thus, an essential ingredient in the present invention is hypochlorite. Preferably the hypochlorite is an alkali metal hypochlorite. Although alkali metal hypochlorites are preferred other hypochlorite compounds may also be used herein and can be selected from calcium and magnesium hypochlorite. According to the present invention the com-

positions comprise said hypochlorite compound such that the content of active chlorine in the composition is from 0.4% to 5%, preferably from 1% to 4%, most preferably from 1% to 3%.

[0017] Another essential ingredient is a combination of an amine oxide with an alkyl sulphate to improve skin mildness of the composition. Said amine oxide is according to the formula $R_1R_2R_3NO$, wherein R_1 is a C_8 to C_{18} alkyl group and R_2 and R_3 are independently C_1 to C_3 alkyl groups. Preferably R_1 is a C_{10} - C_{18} , more preferably C_{12} - C_{18} alkyl group and R_2 and R_3 are preferably independently C_1 - C_3 , more preferably C_1 - C_2 alkyl groups. In the present invention the composition comprises from 1% to 5%, more preferably from 1.5% to 4.5%, most preferably from 2% to 4% of said amine oxide and mixtures thereof.

[0018] Said alkyl sulphate is according to the formula R_4OSO_3H , wherein R_4 is a C_6 to C_{10} , preferably a C_7 - C_9 , more preferably a C_8 alkyl group. According to the present invention the composition comprises from 1% to 8%, more preferably from 1.5% to 7.5%, most preferably from 2% to 7% of said alkyl sulphate and mixtures thereof.

[0019] According to the present invention the compositions may further comprise a number of additional ingredients. Suitable optional ingredients include other hypochlorite-compatible long chain surface actives including alkyl sarcosinates, alkyl ether sulphates, paraffin sulphonates and amine oxides.

[0020] Another optional component of the present invention is an alkali metal salt of a C_8 - C_{18} fatty acid. Suitable fatty acids for use herein can be any C_8 - C_{18} fatty acid, preferably fully saturated, preferably a sodium, potassium or lithium salt, more preferably the sodium salt.

[0021] In a highly preferred embodiment of the present invention the compositions have a pH greater than 10, preferably greater than 11, more preferably greater than 12. This is achieved by the addition of from 0.8% to 1.5% of a caustic alkali. Suitable caustic alkalis for use herein include sodium and potassium hydroxide.

[0022] According to the present invention the composition may also comprise a number of other additional ingredients such as hypochlorite stable and soluble colourants, perfumes and hydrotopes such as sodium xylene sulphonate.

[0023] According to the present invention the compositions are prepared by methods known in the art such as those described in GB 1 329 086.

[0024] According to the present invention the compositions may be used for a variety of purposes, such as bleaching and hard surfaces cleaning.

[0025] According to the present invention the compositions can be illustrated by the following examples.

Examples

EXAMPLE	1	2	3	4	5
% weight	%	%	%	%	%
Ingredients :					
Coconut dimethyl amine oxide	0.6	0.8	1	0.6	0.6
Tetra decyldimethyl amine oxide**	3	3	3	4	2
Octyl alkyl sulphate	3	3	3	4	3
Coconut fatty acid***	0.9	0.5	0.5	0.5	
Sodium hypochlorite	1.7	1.4	1.4	1.4	1.7
Sodium hydroxide	1	1	1	1	1.3
Silicate	0.4	0.04	0.04	0.04	0.4
Perfume mixture	0.3	0.3	0.3	-	-
Minors					
Viscosity (cps at 25°C)	300	420	500	1000	25
pH	13	13	13	13	13

EXAMPLE	6	7	8	9	10
% weight	%	%	%	%	%
Ingredients :					
Coconut dimethyl amine oxide	0.6	0.6	0.6	0.6	0.6
Tetra decyldimethyl amine oxide**	2	1	-	4	4
Octyl alkyl sulphate	2	1	1	4	5
Coconut fatty acid***	0.9	0.9	0.5	0.5	
Sodium hypochlorite	1.4	1.4	1.4	1.4	2
Sodium hydroxide	1.1	1.1	1.1	1.1	1.3
Silicate	0.4	0.4	0.4	0.4	0.4
Perfume mixture	0.25	0.25	0.25	0.3	0.25
Minors					
Viscosity (cps at 25°C)	280	200	20	500	30
pH	13	13	13	13	13

EXAMPLE	11	12	13	14
% weight	%	%	%	%
Ingredients :				
Coconut dimethyl amine oxide	1	1	1	1
Tetra decyldimethyl amine oxide**	2	2	2	2
Octyl alkyl sulphate	4	5	6	7
Coconut fatty acid***				
Sodium hypochlorite	1.7	1.7	1.7	1.7
Sodium hydroxide	1	1	1	1
Silicate	0.04	0.04	0.04	0.04
Perfume mixture	0.3	0.3	0.3	0.3
Minors				
Viscosity (cps at 25°C)	15	15	15	15
pH	13	13	13	13

* Hoechst raw material containing the following chain length distribution : C10 and lower 2%max, C12 62%-75%, C14 21%-30%, C16 C18 8% maximum.

** Akzo raw material containing the following chain length distribution : C12 2%, C14 97%, C16 1%.

*** Unichema raw material containing the following chain length distribution : C8-C10 1.5%, C12 53%, C14 24%, C16 14%, C18 7.5%.

Claims

1. The use of the combination of an amine oxide according to the formula $R_1R_2R_3NO$, wherein R_1 is a C_8 to C_{18} alkyl group and R_2 and R_3 are independently C_1 to C_3 alkyl groups, at a level of 1% to 5% by weight of the total composition, with an alkyl sulphate according to the formula R_4OSO_3H , wherein R_4 is a C_6 to C_{10} alkyl group, at a level of 1% to 8% by weight of the total composition, to improve the skin mildness of a composition comprising from 0.4% to 5% by weight of hypochlorite.
2. The use according to claim 1, wherein in said amine oxide R_1 is C_{10} - C_{12} and R_2 is C_1 and R_3 is C_1 .
3. The use according to claims 1 and 2, wherein in said alkyl sulphate R_4 is C_7 - C_9 .
4. The use according to any of the preceding claims, wherein said hypochlorite is sodium hypochlorite.

5. The use according to any of the preceding claims, wherein the pH of said composition is at least 12.
6. The use according to any of the preceding claims, wherein said composition further comprises surfactants selected from alkyl sulphonates, C₁₂-C₁₈ alkyl sulphates, alkyl ether carboxylates and alkyl ether sulphates.

Patentansprüche

1. Verwendung der Kombination aus einem Aminoxid gemäß der Formel R₁R₂R₃NO, worin R₁ eine C₈-C₁₈-Alkylgruppe ist und R₂ und R₃ unabhängig voneinander C₁-C₃-Alkylgruppen sind, in einem Anteil von 1 bis 5 Gew.-% der gesamten Zusammensetzung, mit einem Alkylsulfat gemäß der Formel R₄OSO₃H, worin R₄ eine C₆-C₁₀-Alkylgruppe ist, in einem Anteil von 1 bis 8 Gew.-% der gesamten Zusammensetzung, zur Verbesserung der Hautsanfttheit einer 0,4 bis 5 Gew.-% Hypochlorit umfassenden Zusammensetzung.
2. Verwendung nach Anspruch 1, wobei in dem Aminoxid R₁ C₁₀-C₁₂ ist und R₂ C₁ ist und R₃ C₁ ist.
3. Verwendung nach den Ansprüchen 1 und 2, wobei in dem Alkylsulfat R₄ C₇-C₉ ist.
4. Verwendung nach mindestens einem der vorangehenden Ansprüche, wobei das Hypochlorit Natriumhypochlorit ist.
5. Verwendung nach mindestens einem der vorangehenden Ansprüche, wobei der pH der Zusammensetzung mindestens 12 beträgt.
6. Verwendung nach mindestens einem der vorangehenden Ansprüche, wobei die Zusammensetzung weiterhin Tenside umfaßt, gewählt aus Alkylsulfonaten, C₁₂-C₁₈-Alkylsulfaten, Alkylethercarboxylaten und Alkylethersulfaten.

Revendications

1. Utilisation de la combinaison d'un oxyde d'amine selon la formule R₁R₂R₃NO, dans laquelle R₁ est un groupe alkyle en C₈ à C₁₈ et R₂ et R₃ sont indépendamment des groupes alkyle en C₁ à C₃, à raison de 1% à 5% en poids de la composition totale, avec un alkylsulfate selon la formule R₄OSO₃H, dans laquelle R₄ est un groupe alkyle en C₆ à C₁₀, à raison de 1% à 8% en poids de la composition totale, pour améliorer la douceur de la peau au contact d'une composition comprenant de 0,4% à 5% en poids d'hypochlorite.
2. Utilisation selon la revendication 1, dans laquelle, dans ledit oxyde d'amine, R₁ est en C₁₀-C₁₂ et R₂ est en C₁ et R₃ est en C₁.
3. Utilisation selon les revendications 1 et 2, dans laquelle, dans ledit alkylsulfate, R₄ est en C₇-C₉.
4. Utilisation selon l'une quelconque des revendications précédentes, dans laquelle ledit hypochlorite est un hypochlorite de sodium.
5. Utilisation selon l'une quelconque des revendications précédentes, dans laquelle le pH de ladite composition est d'au moins 12.
6. Utilisation selon l'une quelconque des revendications précédentes, dans laquelle ladite composition comprend en outre des tensioactifs choisis parmi des alkylsulfonates, des alkylsulfates en C₁₂-C₁₈, des alkylethercarboxylates et des alkylethersulfates.