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(71) Applicant (for all designated States except US): **COLGATE-PALMOLIVE COMPANY** [US/US]; 300 Park Avenue, New York, New York 10022 (US).

(72) Inventors; and

(75) Inventors/Applicants (for US only): **MERCADO, Hedeliza, Malonzo** [CA/CA]; 19 Cromwell Road, Scarborough, Ontario M1J 3N1 (CA). **LALLEMANT, Colette** [FR/FR]; 91 Rue Gambetta, F-92500 RueilMalmaison (FR). **BOUDOT, Pierre** [FR/FR]; 19 Rue De Versailles, F-91400 Orsay (FR). **LABOWS, John, N.** [US/US]; 631 Colonial Drive, Horsham, Pennsylvania 19044 (US).

(74) Agent: **PARK, Ellen, K.**; COLGATE-PALMOLIVE COMPANY, 909 River Road, P.O. Box 1343, Piscataway, New Jersey 08855-1343 (US).

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(54) Title: BLEACH ODOR REDUCING CHLORINE BLEACH COMPOSITION

(57) Abstract: The present invention relates to the use of ethyl tricyclo [5.2.1.0₂₅] decan-2-carboxylate in a hypochlorite containing products to reduce the bleach odor on skin, when such products come in contact with human skin.



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BLEACH ODOR REDUCING CHLORINE BLEACH COMPOSITION

Background of the Invention

The odor of bleach is unacceptable on human skin which has come in contact
5 with a bleach cleaning composition during cleaning of a hard surface.

PCT application WO96/27651 teaches a composition containing a halogen bleach, a bleach booster and NH_2 compounds for controlling halogen induced skin malodor.

EP patent application EP0812909A1 teaches a hypochlorite bleach containing
10 composition which contains a polycarboxylate polymer to reduce bleach malodor.

PCT application WO95/08610 teaches the use of short chain ($\text{C}_6\text{-C}_{10}$) alkyl sulfate surfaces to reduce bleach odor.

Summary of the Invention

The present invention relates to a bleach odor reducing agent which reduces
15 bleach odor on human skin, wherein the bleach odor reducing agent can be incorporated in any hypochlorite containing bleach compound.

To achieve the foregoing and other objects in accordance with the purpose of the invention, as embodied and broadly described herein the novel bleach odor reducing agent once solubilized in surfactant that is bleach compatible, preferably, amine oxide,
20 can be added in any hypochlorite containing product. The hypochlorite containing product contains a chlorine containing bleach compound, an alkali metal hydroxide, an alkali metal carbonate, and/or alkali metal silicate, and/or an alkali metal phosphate, a bleach odor reducing agent, a surfactant which is preferably amine oxide and water, wherein the composition has a pH of at least 9.

Detailed Description of the Invention

The present invention relates to the use of ethyl tricyclo [5.2.1.0²⁵] decan-2-carboxylate such as Fruitate™ which is available from the KAO Corporation, which now has been found to be a bleach odor reducing agent capable of reducing the bleach odor

on human skin. This bleach odor reducing agent can be added in any hypochlorite containing product.

The present invention may be used for a wide range of application, such as incorporation in hard surface cleaners, laundry applications, both hand washing as well as washing with washing machine. The composition of applicable hypochlorite containing product comprises by weight:

(a) 0.1% to 10%, more preferably 0.2% to 5% of a chlorine bleach compound;

(b) 0.0001% to 5%, more preferably 0.00005% to 0.4% of a bleach odor reducing agent;

(c) 0.1% to 5% , more preferably 0.5% to 4% of a surfactant which is preferably an amine oxide surfactant;

(d) 0.05% to 3%, more preferably 0.1% to 1.5% of an alkali metal hydroxide such as sodium hydroxide or potassium hydroxide;

(e) 0.2% to 5%, more preferably 0.3% to 4% of an alkali metal carbonate such as sodium carbonate or potassium carbonate;

(f) 0.1% to 3% of an alkali metal silicate such as sodium silicate which can acts as a buffer and a corrosion inhibitor;

(g) 0.25% to 5% of an alkali metal phosphate builder salt;

(h) 0% to 3%, more preferably 0.1% to 1.5% of a fatty acid having 8 to 22 carbon atoms which functions as a viscosity control agent;

(i) 0% to 1%, more preferably 0.0001% to 0.1% of a silicone foam control agent;

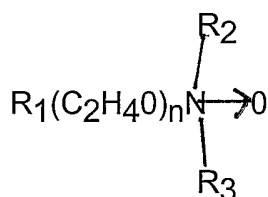
(j) 0% to 0.6%, more preferably 0.1% to 0.5% of a bleach compatible perfume; and

(k) the balance being water, wherein the composition has a pH of 9 to 14.

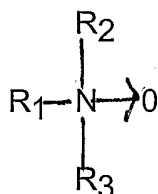
An essential ingredient for use herein is hypochlorite. Although any chlorine bleach compound may be employed in the compositions of this invention, such as dichloro-isocyanurate, dichloro-dimethyl hydantoin, or chlorinated TSP, alkali metal or

alkaline earth metal, e.g. potassium, lithium, magnesium and especially sodium, hypochlorite is preferred. A solution containing 0.1 to 10.0% by weight of sodium hypochlorite contains or provides the necessary percentage of available chlorine. About 0.2% to 5% by weight of available chlorine is especially preferred. For example,
 5 sodium hypochlorite (NaOCl) solution of from 11 to 13% available chlorine in amounts of 1.0 to 79%, preferably 2.0 to 40.0%, can be advantageously used.

The FruitateTM needs to be solubilized first in order that it can be incorporated in hypochlorite product. Hence, another essential ingredient is surfactant which is preferably an amine oxide. Amine oxide semi-polar nonionic surfactants used in the
 10 instant composition comprise compounds and mixtures of compounds having the formula



wherein R₁ is an alkyl, 2-hydroxyalkyl, 3-hydroxyalkyl, or 3-alkoxy-2-hydroxypropyl radical in which the alkyl and alkoxy, respectively, contain from 8 to 18 carbon atoms, R₂ and R₃ are each methyl, ethyl, propyl, isopropyl, 2-hydroxyethyl, 2-hydroxypropyl, or
 20 3-hydroxypropyl, and n is from 0 to 10. Particularly preferred are amine oxides of the formula:



wherein R₁ is a C₁₂₋₁₆ alkyl and R₂ and R₃ are methyl or ethyl. The above ethylene oxide condensates, amides, and amine oxides are more fully described in U.S. Pat. No. 4,316,824 which is hereby incorporated herein by reference.

30 The hypochlorite containing product needs to maintain a high pH of 9 to 14, preferably 10 to 13 and most preferably between 11 to 12. This is achieved with the addition of alkaline metal salts of hydroxide and buffers. Examples of suitable buffers

are alkali metal salts of carbonate, silicate, phosphate or mixture thereof, but non-limiting to these examples or combination thereof.

The composition may further include additional ingredients such as hypochlorite compatible anti-foam agents, chelating agents, colourants, perfumes, viscosity control agents and hydrotopes.

The preferred long chain fatty acids used in the instant compositions are the higher aliphatic fatty acids having from 8 to 22 carbon atoms, more preferably from 10 to 20 carbon atoms, and especially preferably from 12 to 18 carbon atoms, inclusive of the carbon atom of the carboxyl group of the fatty acid. The aliphatic radical may be saturated or unsaturated and may be straight or branched. Straight chain saturated fatty acids are preferred. Mixtures of fatty acids may be used, such as those derived from natural sources, such as tallow fatty acid, coco fatty acid, soya fatty acid, etc., or from synthetic sources available from industrial manufacturing processes.

Thus, examples of the fatty acids include, for example, decanoic acid, dodecanoic acid, palmitic acid, myristic acid, stearic acid, tallow fatty acid, coco fatty acid, soya fatty acid, mixtures of these acids, etc. Stearic acid and mixed fatty acids, e.g. stearic acid/palmitic acid, are preferred.

When the free acid form of the fatty acid is used directly it will generally associate with the potassium and sodium ions in the aqueous phase to form the corresponding alkali metal fatty acid soap. However, the fatty acid salts may be directly added to the composition as sodium salt or potassium salt, or as a polyvalent metal salt, although the alkali metal salts of the fatty acids are preferred fatty acid salts.

The amount of the fatty acid or fatty acid salt stabilizer to achieve the desired enhancement of physical stability will depend on such factors as the nature of the fatty acid or its salt, the nature and amount of the thickening agent, detergent active compound, inorganic salts, other ingredients, as well as the anticipated storage and shipping conditions.

Alkali metal (e.g. potassium or sodium) silicate, which provides alkalinity and protection of hard surfaces, such as fine china glaze and pattern, is generally employed in an amount ranging from 0.1 to 3 weight percent, preferably 0.2 to 2.5 weight percent in the composition. The sodium or potassium silicate is generally added in the form of an aqueous solution, preferably having $\text{Na}_2\text{O}:\text{SiO}_2$ or $\text{K}_2\text{O}:\text{SiO}_2$ ratio of 1:1.3 to 1:2.8. A preferred silicate is sodium metasilicate.

A preferred solid phosphate builder salt used in the instant composition is an alkali metal polyphosphate such as sodium tripolyphosphate ("TPP"). One suitable TPP is sold under the name Thermphos NW. The particles size of the Thermphos NW TPP, as supplied is usually averages 200 microns with the largest particles being 400 microns. In place of all or part of the alkali metal polyphosphate one or more other detergent builder salts can be used. Suitable other builder salts are alkali metal carbonates, phosphates, silicates, lower polycarboxylic acid salts, and polyacrylates, polymaleic anhydrides and copolymers of polyacrylates and polymaleic anhydrides and polyacetal carboxylates.

Specific examples of such builders are sodium carbonate, potassium carbonate, sodium pyrophosphate, sodium tripolyphosphate, potassium tripolyphosphate, potassium pyrophosphate, sodium hexametaphosphate, sodium sesquicarbonate, sodium mono and diorthophosphate. The builder salts can be used alone with the amine oxide nonionic surfactant or in an admixture with other builders.

Essentially, any compatible anti-foaming agent can be used in the instant composition. Preferred anti-foaming agents are silicone anti-foaming agents. These are alkylated polysiloxanes and include polydimethyl siloxanes, polydiethyl siloxanes, polydibutyl siloxanes, phenyl methyl siloxanes, trimethylsilanated silica and triethylsilanated silica. A suitable anti-foaming agent is Silicone TP201 or Silicone RD from Union Carbide.

Description of the Preferred Embodiments

About 98 different perfume oils that are compatible with bleach were initially screened, of which only 13 were evaluated further in a panel test situation. There were three oils that passed the panel tests when incorporated at 0.015% in a 5% hypochlorite bleach. These were the fruitate, cuminal nitrile and cornmint. To ensure that the effect was not due to the masking of the bleach odor being perfume oils, the level was further reduced to 0.0001%. Only Fruitate passed the test.

The following formula was made with and without Fruitate and subjected to a panel test for odor evaluation.

	Without Fruitate	With Fruitate
% NaOCl	5.25	5.25
% NaOH	0.7	0.7
% Na ₂ CO ₃	1.5	1.5
% Fruitate	0	0.0001
% Softened Water	To 100	To 100

Results showed that Fruitate Formula has less bleach smell than the formula without fruitate:

% of Respondents

➤ On skin	90
➤ On sponge	97
➤ On skin after rinsing	87

As well, the Fruitate formula was preferred as shown:

➤ On skin	73
➤ On sponge	70
➤ On skin after rinsing	73

Another test conducted was to incorporate Fruitate in Javel Plus Lavande currently being marketed in France and in a regular multi-surface bleach cleaner (MSBC) being

marketed globally by Colgate Palmolive, both of which contained compounded perfumes. Then a panel test was conducted and results showed that products with Fruitate were judged to have less bleach smell and preferred over the existing products without Fruitate:

5		% of Respondents	
		In Javel Plus Lavande	Regular MSBC
	Less Bleach Smell		
	➤ On skin	67	67
	➤ On sponge	80	63
10	➤ On skin after rinsing	83	73
	Preference		
	➤ On skin	73	70
	➤ On sponge	80	67
15	➤ On skin after rinsing	73	70

Further comparison was done between 0.0001% Fruitate and 0.0001% Lavander perfume in a multi-surface bleach cleaner (MSBC). The lavender perfume is a complete fragrance formula used in existing MSBC product. Results showed that MSBC with Fruitate was judged to have less bleach smell and preferred significantly over MSBC with the Lavander perfume as shown:

Fruitate formula has less bleach smell than non-fruitate MSBC:

	% of Respondents	
	➤ On skin	63
25	➤ On sponge	67
	➤ On skin after rinsing	73

As well, the Fruitate formula was preferred as shown:

- | | |
|-------------------------|----|
| ➤ On skin | 67 |
| ➤ On sponge | 60 |
| ➤ On skin after rinsing | 67 |

5

The Panel Test Method consists of:

1. Recruit at least 15 panelists.
2. A paired comparison between two products is always conducted.
3. Each respondent is asked to rinse each hand in a 4L beaker of tap water at room
10 temperature by dipping the hands into the water for five times. The hands are
pat dried on a clean towel.
4. On each hand, a sponge containing 6 drops of bleach products that are being
compared are squeezed for 3 times. Fresh sponge is used with each product
per respondent.
- 15 5. The respondents are then asked to smell their hands one after the other,
smelling the left hand first and ask the following questions:
 - a. Which smells more bleach?
 - b. Which do you prefer?
6. The respondents are then asked to smell the sponge, starting with the left
20 sponge and ask the same question as in #5.
7. Rinse the hands as in step 3.
8. Smell the hands as in step 5 and ask the same questions.
9. Repeat the test among the same group of respondents but this time, the smelling
should start with the right hand.
- 25 10. Total the answers.

WHAT IS CLAIMED IS

1. A hypochlorite containing composition comprises by weight:
 - (a) 0.1% to 10% of a chlorine bleach compound;
 - (b) 0.0001% to 5% of a bleach odor reducing agent;
 - 5 (c) 0.05% to 3% of an alkali metal hydroxide;
 - (d) 0.2% to 5% of an alkali metal carbonate;
 - (f) 0.1% to 3% of an alkali metal silicate which can acts both as a buffer and
a corrosion inhibitor;
 - (g) 0.25% to 5% of a phosphate builder salt; and
 - 10 (h) the balance being water, wherein the composition has a pH of 9 to 14.
2. The composition according to Claim 1, further including an amine oxide
surfactant.
3. The composition according to Claim 2, further including a fatty acid.
4. The composition according to Claim 3, further including a silicone foam
15 control agent.
5. The composition according to Claim 4, further including a perfume.
6. The composition according to Claim 1, further including a perfume.
7. The composition according to Claim 3, further including a silicone foam
control agent.
- 20 8. The composition according to Claim 6, further including a fatty acid.

INTERNATIONAL SEARCH REPORT

International Application No
PCT/US2004/015483

A. CLASSIFICATION OF SUBJECT MATTER IPC 7 C11D3/395 C11D3/50		
According to International Patent Classification (IPC) or to both national classification and IPC		
B. FIELDS SEARCHED Minimum documentation searched (classification system followed by classification symbols) IPC 7 C11D		
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched		
Electronic data base consulted during the international search (name of data base and, where practical, search terms used) EPO-Internal, WPI Data, PAJ		
C. DOCUMENTS CONSIDERED TO BE RELEVANT		
Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 622 451 A (PROCTER & GAMBLE) 2 November 1994 (1994-11-02) claims; examples	1-8
X	WO 96/27651 A (PROCTER & GAMBLE) 12 September 1996 (1996-09-12) cited in the application page 13; examples 1,4,5	1-8
X	DATABASE WPI Section Ch, Week 198825 Derwent Publications Ltd., London, GB; Class D25, AN 1988-171056 XP002294884 & JP 63 108099 A (LION CORP) 12 May 1988 (1988-05-12) abstract	1-8
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☒ Further documents are listed in the continuation of box C. ☒ Patent family members are listed in annex.		
* Special categories of cited documents : "A" document defining the general state of the art which is not considered to be of particular relevance "E" earlier document but published on or after the international filing date "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified) "O" document referring to an oral disclosure, use, exhibition or other means "P" document published prior to the international filing date but later than the priority date claimed "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art. "&" document member of the same patent family		
Date of the actual completion of the international search 3 September 2004		Date of mailing of the international search report 15/09/2004
Name and mailing address of the ISA European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo nl, Fax: (+31-70) 340-3016		Authorized officer Pfannenstein, H

INTERNATIONAL SEARCH REPORT

International Application No
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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

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X	WO 95/08610 A (PROCTER & GAMBLE) 30 March 1995 (1995-03-30) cited in the application claims; example Q -----	1-8
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Information on patent family members

national Application No

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