

19



Europäisches Patentamt  
European Patent Office  
Office européen des brevets



11 Publication number:

**0 335 584 B1**

12

**EUROPEAN PATENT SPECIFICATION**

- 45 Date of publication of patent specification: **30.11.94** 51 Int. Cl.<sup>5</sup>: **C11D 3/395**, C11D 3/16, C11D 1/75
- 21 Application number: **89302882.9**
- 22 Date of filing: **22.03.89**

54 **Bleaching composition.**

- 30 Priority: **31.03.88 GB 8807752**
- 43 Date of publication of application: **04.10.89 Bulletin 89/40**
- 45 Publication of the grant of the patent: **30.11.94 Bulletin 94/48**
- 84 Designated Contracting States: **CH DE ES FR GB GR IT LI NL SE**
- 56 References cited:  
**EP-A- 0 110 544**  
**EP-A- 0 244 611**  
**DE-A- 2 042 037**  
**FR-A- 2 620 727**

- 73 Proprietor: **UNILEVER PLC**  
**Unilever House**  
**Blackfriars**  
**London EC4P 4BO (GB)**
- 84 Designated Contracting States: **GB**
- 73 Proprietor: **UNILEVER N.V.**  
**Weena 455**  
**NL-3013 AL Rotterdam (NL)**
- 84 Designated Contracting States: **CH DE ES FR GR IT LI NL SE**
- 72 Inventor: **Donker, Cornelius Bernard**  
**Abeelstraat 10**  
**NL-3329 AD Dordrecht (NL)**
- 74 Representative: **Ford, Michael Frederick et al**  
**MEWBURN ELLIS**  
**York House**  
**23 Kingsway**  
**London WC2B 6HP (GB)**

**EP 0 335 584 B1**

Note: Within nine months from the publication of the mention of the grant of the European patent, any person may give notice to the European Patent Office of opposition to the European patent granted. Notice of opposition shall be filed in a written reasoned statement. It shall not be deemed to have been filed until the opposition fee has been paid (Art. 99(1) European patent convention).

## Description

The present invention relates to an aqueous bleaching composition suitable for laundry and general domestic bleaching and disinfecting purposes. More particularly, it relates to an aqueous bleaching composition which also contains a synthetic detergent which is soluble in the composition thereby to impart a foaming capacity to the composition. The preferred bleaching agent is alkali metal hypochlorite.

Such an aqueous alkali metal hypochlorite composition comprising a foam-imparting synthetic detergent is known in the art, e.g. from British Patent Specification 886,084. This specification describes inter alia the use of betaine-type quaternary ammonium detergent surfactants in aqueous alkali metal hypochlorite compositions. Another suitable type of foam-imparting synthetic detergents are the trialkylamine oxides, containing one C<sub>12</sub>-C<sub>18</sub> alkyl group and two C<sub>1</sub>-C<sub>3</sub> alkyl groups.

Such compositions, while having the required foaming characteristics, present a problem, however, in that, during manufacture and packing of the composition the foaming of the composition makes it difficult to fill the containers properly; the composition foams out of the bottle, resulting in messy bottles which are not filled with the proper filling weight.

We have now found that this problem can be overcome by adding a suitable foam-depressing agent to the composition. We have found that if a foam-depressing agent is added which is not stable in the aqueous bleaching composition, the foam produced during manufacture and packing of the composition is significantly reduced. It may be reduced to an almost negligible level. However, the foaming capacity of the composition is restored upon storage of the packed composition owing to the instability of the foam-depressing agent in the composition, thus resulting in a foaming composition after storage thereof.

The features of this invention can be stated in several ways. In a first aspect the invention provides an aqueous bleaching composition alkali metal hypochlorite composition comprising a foaming synthetic detergent with a controlled foaming behaviour, characterised in that it has been obtained by the addition thereto of a foam-depressing agent which is not stable in the composition.

In a second aspect the invention provides a process for the production of an aqueous bleaching composition comprising an aqueous mixture of a bleaching agent and a foaming synthetic detergent, characterised by including a foam-depressing agent which is not stable in the mixture, packing the composition in containers while the foam-depressing agent remains effective, and optionally then storing the containers.

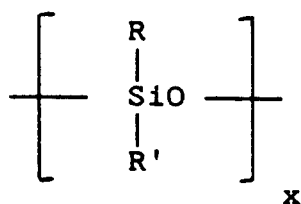
In another aspect the invention provides a bleaching composition obtained by including a foam-depressing agent in an aqueous mixture of a bleaching agent and a foaming synthetic detergent, which foam-depressing agent is not stable therein, packing the composition in containers while the said foam-depressing agent remains effective, and optionally then storing the containers.

The composition in the containers will change during storage. Initially it will be temporarily low-foaming or non-foaming, with a latent foaming property. As time passes the foam-depressing agent is replaced by products of its decomposition and the foaming property will appear.

The invention extends of course to containers with the bleaching composition therein. A preferred feature made possible by this invention is that the containers are filled substantially full with the composition.

The foam-depressing agent must be unstable in the composition. Foam-depressing agents which have been found very effective are silicones (more correctly polysiloxanes). These may be used in an amount which is at least 0.001% by weight of the composition. Amounts greater than 0.01% by weight will normally not be necessary, although amounts somewhat in excess of this may be used if desired, for instance up to 0.5% by weight of the composition.

Polysiloxanes which can be employed as antifoam agents have the structure:



wherein R and R', which may be the same or different, are alkyl or aryl groups having from 1 to 6 carbon atoms; and x is an integer of at least 20.

The preferred polysiloxanes are polydimethylsiloxanes where both R and R' are methyl groups. Usually the molecular weight is from 500 to 200 000.

Examples of suitable commercially available polydimethylsiloxanes are the "Silicone 200 Fluids", available from Dow Corning.

5 The composition will generally contain from 1 to 15% by weight of the bleaching agent. As mentioned, the preferred bleaching agent is alkali metal hypochlorite, for example sodium hypochlorite. Other bleaching agents may be used, for example hydrogen peroxide. The time taken for the composition to regain its foaming properties will of course depend on the rate of reaction between the bleaching agent and the silicone. Thus, hydrogen peroxide would take somewhat longer than a like amount of hypochlorite to  
10 degrade the silicone but this merely necessitates some increase in the time for which the composition is stored after packing.

Various foam-imparting detergents are available. Synthetic detergents are described in "Surface Active Agents" by Schwartz and Perry (Interscience 1949) and Volume II by Schwartz, Perry and Berch (Interscience 1958).

15 The synthetic detergents preferably used in this invention are amine oxides, more preferably trialkyl amine oxides in which one alkyl group has from 8 to 20 carbon atoms while the other two have from 1 to 4 carbon atoms. An example is lauryl dimethyl amine oxide.

The amount of surfactant included in the composition typically lies in the range from 0.05 to 1.5% by weight of the composition. Amounts somewhat greater than 1.5% by weight may be used if desired, for  
20 instance up to 5% by weight.

Usually the composition also contains free alkali to provide a desired alkaline pH. Other additives can be included, such as perfumes and colouring agents.

The following Example illustrates the invention.

25 Example

Four bleaching compositions as set out in the Table below were prepared. The proportions stated in this Table are percentages by weight based on the whole composition as prepared.

30 The foaming characteristics of the compositions were assessed by shaking a quantity of each composition in accordance with a standardised procedure and then observing the height of foam generated. The compositions were analysed for residual bleaching agent after a period of storage. These test results are included in the Table below.

Table

35

sodium hypochlorite	5	5	5	5
lauryl dimethyl amine oxide	0.4	0.4	0.4	0.4
sodium hydroxide	0.5	0.5	0.5	0.5
40 perfume	0.06	0.06	0.06	0.06
silicone oil	0.01	0.005	0.001	-
water	q.s	q.s	q.s	q.s
Foam height (initial)	0	10	70	200
Foam height (after 1 week storage at room temperature)	75	70	85	125
Foam height (after 2 weeks storage at room temperature)	150	175	200	150
45 % sodium hypochlorite left after 8 weeks storage at 37 ° C	68	68	68	70

This example shows that the initial foaming is significantly reduced, but that the foaming characteristics reappear after 1-2 weeks storage, while there is no substantial loss of bleaching agent.

50

**Claims**

1. A bleaching composition obtained by including a foam-depressing agent in an aqueous mixture of a bleaching agent and a foaming synthetic detergent, which foam-depressing agent is not stable therein,  
55 packing the composition in containers and optionally then storing the containers.
2. A bleaching composition according to claim 1 wherein the bleaching agent is an alkali metal hypochlorite.

3. A bleaching composition according to any one of the preceding claims wherein the foam-depressing agent is a silicone.
- 5 4. A bleaching composition according to any one of the preceding claims wherein the synthetic detergent is a trialkyl amine oxide.
- 10 5. A bleaching composition according to any one of the preceding claims containing from 1% to 15% by weight of the bleaching agent, 0.05 to 1.5% by weight of the synthetic detergent and at least 0.001% of the foam-depressing agent.
- 15 6. A container having therein bleaching composition according to any one of the preceding claims.
7. A process for the production of an aqueous bleaching composition comprising an aqueous mixture of a bleaching agent and a foaming synthetic detergent, characterised by including a foam-depressing agent which is not stable in the mixture, and packing the composition in containers while foaming is inhibited by the presence of the foam-depressing agent.
8. A process according to claim 7 followed by storing the containers with the composition therein.
- 20 9. A container having therein bleaching composition produced and packed by the process of claim 7 or claim 8.

#### Patentansprüche

- 25 1. Bleichmittelzusammensetzung, erhalten durch Einschließen eines schaumunterdrückenden Mittels in eine wässrige Mischung eines Bleichmittels und eines schäumenden synthetischen Detergens, wobei das schaumunterdrückende Mittel darin nicht stabil ist, Verpacken der Zusammensetzung in Behälter und gegebenenfalls anschließende Lagerung der Behälter.
- 30 2. Bleichmittelzusammensetzung nach Anspruch 1, worin das Bleichmittel ein Alkalimetallhypochlorit ist.
3. Bleichmittelzusammensetzung nach einem der vorhergehenden Ansprüche, worin das schaumunterdrückende Mittel ein Silicon ist.
- 35 4. Bleichmittelzusammensetzung nach einem der vorhergehenden Ansprüche, worin das synthetische Detergens ein Trialkylaminoxid ist.
- 40 5. Bleichmittelzusammensetzung nach einem der vorhergehenden Ansprüche, enthaltend von 1 bis 15 Gewichtsprozent des Bleichmittels, 0,05 bis 1,5 Gewichtsprozent des synthetischen Detergens und zumindest 0,001 % des schaumunterdrückenden Mittels.
6. Behälter, enthaltend eine Bleichmittelzusammensetzung nach einem der vorhergehenden Ansprüche.
- 45 7. Verfahren zur Herstellung einer wässrigen Bleichmittelzusammensetzung, enthaltend eine wässrige Mischung eines Bleichmittels und eines schäumenden synthetischen Detergens, gekennzeichnet durch Einschließen eines schaumunterdrückenden Mittels, das in der Mischung nicht stabil ist, und Verpacken der Zusammensetzung in Behälter, während das Schäumen durch die Anwesenheit des schaumunterdrückenden Mittels verhindert ist.
- 50 8. Verfahren nach Anspruch 7, wobei die Behälter mit der darin enthaltenen Zusammensetzung gelagert werden.
9. Behälter, enthaltend eine Bleichmittelzusammensetzung, hergestellt und verpackt nach dem Verfahren von Anspruch 7 oder Anspruch 8.

55

**Revendications**

- 5 1. Composition de blanchiment obtenue Par incorporation d'un agent d'abaissement de moussage en un mélange aqueux d'un agent de blanchiment et d'un détergent synthétique moussant, cet agent d'abaissement du moussage n'étant pas stable dans la composition, emballage de la composition dans des récipients et, facultativement, stockage des récipients.
- 10 2. Composition de blanchiment selon la revendication 1, dans laquelle l'agent de blanchiment est un hypochlorite de métal alcalin.
3. Composition de blanchiment selon la revendications 1 ou 2, dans laquelle l'agent d'abaissement du moussage est une silicone.
- 15 4. Composition de blanchiment selon l'une quelconque des revendications précédentes, dans laquelle le détergent synthétique est un oxyde de trialkylamine.
- 20 5. Composition de blanchiment selon l'une quelconque des revendications précédentes, contenant de 1 à 15° en poids de l'agent de blanchiment, de 0,05 à 1,5% en poids du détergent synthétique et au moins 0,001% de l'agent d'abaissement du moussage.
6. Récipient contenant une composition de blanchiment selon l'une quelconque des revendications précédentes.
- 25 7. Procédé de production d'une composition aqueuse de blanchiment comprenant un mélange aqueux d'un agent de blanchiment et d'un détergent synthétique moussant, caractérisé en ce qu'on incorpore un agent d'abaissement du moussage qui n'est pas stable dans le mélange et on conditionne la composition dans des récipients tout en empêchant le moussage par la présence de l'agent d'abaissement du moussage.
- 30 8. Procédé selon la revendication 7, qu'on fait suivre du stockage des récipients contenant la composition.
9. Récipient contenant une composition de blanchiment produite et conditionnée par le procédé selon la revendication 7 ou 8.

35

40

45

50

55