
Candidate's Answer

Registered Mail

EPO

DG-2

Munich

Germany

9th March 2005

Dear Sirs

European Patent Application No.

I refer to the Communication under Article 96(2) and Rule 51(2) EPC. Please replace the claims currently on file with the new claims enclosed herewith.

1. Amendments

Basis for the new claims is as follows:

Claim	Basis in application as filed
1	Claims 1 and 2
2	Claim 4
3	Page 5, lines 6 and 7
4	Claim 6; Claim 1 (3)
5	Claim 4; Example 1
6	Page 4, lines 18 to 21; Page 5, lines 1 to 3
7	Claim 5; Claim 1 (3); Page 5, lines 1 to 3

Thus it is submitted that all claims are allowable under Article 123(2) EPC.

It is also submitted that the claims are clear and concise within the meaning of Article 84 EPC.

2. Novelty

2.1 D1 discloses a detergent composition comprising a surfactant, a zeolite and sodium percarbonate coated with sodium octanoate (see the Example of D1). D1 also discloses sodium percarbonate coated with alkali metal salts of monocarboxylic acids of formula $\text{CH}_3(\text{CH}_2)_n\text{COOH}$ or alkali metal salts of dicarboxylic acids of formula $\text{HOOC}(\text{CH}_2)_m\text{COOH}$ wherein $n \geq 2$ and $m \geq 2$ (see page 1, lines 13 to 18). However D1 does not disclose a detergent composition comprising a sodium percarbonate coated with a hydroxycarboxylic acid.

The subject matter of claim 1 is therefore novel over D1.

Furthermore as there is no disclosure in D1 of a sodium percarbonate bleaching agent coated with a hydroxycarboxylic acid, claim 4 is also novel over D1.

Although D1 teaches the use of alkali metal salts of monocarboxylic acids of formula $\text{CH}_3(\text{CH}_2)_n\text{COOH}$ and of dicarboxylic acids of formula $\text{HOOC}(\text{CH}_2)_m\text{COOH}$ for stabilizing sodium percarbonate, there is no disclosure in D1 of the use of a hydroxycarboxylic acid for stabilising sodium percarbonate, therefore claim 7 is also novel over D1.

2.2 D2 discloses a powdery detergent composition comprising zeolite and sodium citrate (page 1, lines 3 and 4), a surfactant and a bleaching agent, which is preferably sodium percarbonate (page 2, lines 1 to 3).

Although sodium citrate is a hydroxycarboxylic acid, D2 fails to disclose the sodium citrate coated on the sodium percarbonate. Instead the sodium citrate is simply added to the detergent composition (see the Example).

The subject matter of claim 1 is therefore novel over D2.

D2 discloses a sodium percarbonate bleaching agent which is stabilised by coating with a mixture of an aqueous boric acid solution and an aqueous alkali metal silicate solution (see page 2, lines 5 to 7 of D2). However, there is no disclosure of a sodium percarbonate bleaching agent coated with a hydroxycarboxylic acid therefore claim 4 is

novel over D2. Further there is no disclosure in D2 of the use of a hydroxycarboxylic acid for stabilising sodium percarbonate. The hydroxycarboxylic acid (sodium citrate) in the detergent composition of D2 is used instead as a co-builder with zeolite (see page 1, lines 4 to 5 and page 1, line 20 of D2). The subject matter of claim 7 is therefore novel over D2.

3. Inventive Step

3.1 Closest Prior Art

The present invention is concerned with a powdery detergent composition which contains a sodium percarbonate bleaching agent having improved storage stability. Both D1 and D2 could be considered to be relevant. However D1 is also principally concerned with the storage stability of sodium percarbonate (see page 1, line 3 of D1) and could accordingly be considered to be more relevant than D2 which is concerned principally with the combination of zeolite and sodium citrate as detergent builder (see page 1, lines 4 to 5 of D2). D1 can therefore be considered to be the closest prior art.

3.2 Technical Problem and Solution thereto

The technical problem solved by the present invention in view of D1 is the provision of an alternative stabilizer for the sodium percarbonate bleaching agent.

The solution to this problem lies in the use of a hydroxycarboxylic acid as the stabilizer. As shown in Table 2 of the present application, the sodium salts of hydroxycarboxylic acids provide stability to sodium percarbonate which is comparable and in most cases better than that provided by the sodium salts of $\text{CH}_3(\text{CH}_2)_n\text{COOH}$. In particular, when sodium citrate is coated onto sodium percarbonate, there is 91.5 % peroxygen remaining after 28 days compared with only 82.5 %, 88.6 % and 78.7 % for sodium salts of $\text{CH}_3(\text{CH}_2)_n\text{COOH}$ wherein $n = 4, 8$ and 10 respectively.

Sodium citrate also provides comparable or better stability when coated onto sodium percarbonate than sodium salts of $\text{HOOC}(\text{CH}_2)_m\text{COOH}$ wherein $m = 4$ (91.4 %) or $m = 12$ (77.2 %).

3.3 Claimed invention not obvious

D1 teaches that the stability is believed to be due to the presence in the carboxylic acid of the unsubstituted alkyl ($\text{CH}_3(\text{CH}_2)_n-$) or unsubstituted alkylene ($-(\text{CH}_2)_m-$) groups (see page 2, lines 10 to 12 of D1). D1 therefore teaches away from the use of substituted carboxylic acids such as hydroxycarboxylic acids. A skilled person seeking to find an alternative stabilizer for the sodium percarbonate would not have modified D1 by replacing the unsubstituted mono- and di-carboxylic acids with hydroxycarboxylic acid because D1 indicates that such a modification would reduce or destroy the stabilising effect. The present invention is therefore not obvious from D1 alone.

Further D2 would not have assisted the skilled person in making this advance. D2 teaches that a mixture of an aqueous boric acid solution and an aqueous alkali metal silicate solution could be coated onto the sodium percarbonate thereby solving the problem of providing an alternative stabiliser. The skilled person would have been directed by D2 to use this mixture as a stabiliser to solve the problem.

Although D2 discloses sodium citrate which is a hydroxycarboxylic acid, it does not associate this compound with stabilisation of sodium percarbonate. It instead teaches use of sodium citrate as a detergent builder. Therefore the skilled person seeking an alternative stabilizer would not have modified D1 by taking the feature of sodium citrate from D2.

Claim 1 is therefore inventive over a combination of D1 and D2.

The subject matter of claims 4 and 7 is also inventive over D1 and D2 for the same reasons as discussed in relation to claim 1.

3.4 Closest prior art (D2 as alternative)

In one aspect D2 could be considered to be the closest prior art rather than D1 because it discloses a more similar composition than D1 does, namely a composition which comprises a hydroxycarboxylic acid (sodium citrate) in addition to the sodium percarbonate, surfactant and zeolite.

3.5 Technical problem and solution thereto

The technical problem solved by the present invention in view of D2 is the provision of an alternative stabiliser for the sodium percarbonate.

The solution to this problem lies in coating the sodium percarbonate with a hydroxycarboxylic acid rather than just adding the hydroxycarboxylic acid to the detergent composition. The advantageous results associated with coating can be seen in Table 1 and in Table 2 of the present application. In every case the stabilising effect is best when the hydroxycarboxylic acid is coated rather than in admixture. Furthermore the decrease in stability over time is less marked when the hydroxycarboxylic acid is coated rather than in admixture.

3.6 Claimed invention not obvious

D2 teaches that the sodium percarbonate is already coated with a mixture of boric acid and alkali metal silicate. These coatings are a different class of compound from hydroxycarboxylic acid so the skilled person would not contemplate coating with a hydroxycarboxylic acid. Furthermore D2 teaches that sodium citrate has a role as a builder in the composition. The skilled person may have been put off coating the sodium percarbonate with sodium citrate in case this diminished the activity of the sodium citrate as a builder. There is no suggestion in D2 that improved stability could be achieved by coating the sodium percarbonate with sodium citrate. Indeed there is no recognition in D2 that sodium citrate acts as a stabiliser at all. The present invention is therefore not obvious from D2 alone.

Further D1 would not have assisted the skilled person in making the advance because D1 does not mention that hydroxycarboxylic acids can be used as stabilisers. D1 in fact teaches away from the use of substituted carboxylic acids as stabilisers. Therefore the skilled person seeking to find alternative stabilisers for sodium percarbonate starting from D2 would not have been motivated by D1 to replace the coating of D2 with a hydroxycarboxylic acid.

The subject matter of claims 1, 4 and 7 is therefore inventive over D2 and over a combination of D2 and D1.

4. Patentability of other claims

4.1 Claims 2 and 3 include all the limitations of claim 1. As claim 1 is novel and inventive the subject matter of these claims is also novel and inventive. Similarly claim 5 includes all the limitations of claim 4 and is novel and inventive by virtue of its dependency.

4.2 Claim 6, which relates to a process for coating a sodium percarbonate bleaching agent with hydroxycarboxylic acid is patentable because an analogy process is novel and inventive insofar as the products produced are novel and inventive (C-IV, 9.12, T119/82). Here the use of a fluid bed drier in the coating process is known from D1 but the product which is the subject matter of claim 4 is novel and inventive as previously discussed.

The particular advantages associated with the subject matter of claims 2 and 5, which relate to sodium citrate should be noted. These advantages are shown in Table 2 and have been discussed above.

5. Communication

5.1 In response to the matter raised in paragraph 1 of the Communication, it is submitted that the new claims are novel over D1 and D2 as discussed in sections 2 and 4 above.

5.2 In response to the matters raised in paragraph 2 of the Communication, the basis for the new claims is provided in section 1 and the position in respect of inventive step is set out in section 3 above.

6. Summation

The present invention as defined in the new claims is novel and inventive. The Examiner is therefore asked to reconsider the application favourably.

The description will be amended for conformity with the claims once the Examiner has acknowledged the allowability of the claims.

Should the Examiner contemplate refusing the application, I request oral proceedings under Article 116 EPC.

I enclose form 1037 for acknowledgement of receipt.

Yours faithfully

SIGNATURE

NAME

AUTHORISED REPRESENTATIVE

Claims

1. *Powdery zeolite based detergent composition comprising a sodium percarbonate bleaching agent, a surfactant and a zeolite as detergent builder, characterized in that the composition comprises based on the weight of sodium percarbonate at least 1 weight percent of an alkali metal salt of a carboxylic acid as stabilizer for the sodium percarbonate bleaching agent, wherein the carboxylic acid is selected a hydroxycarboxylic acid; and*

~~*Powdery detergent composition according to claim 1 wherein the alkali metal carboxylic acid salt is coated on the sodium percarbonate bleaching agent.*~~

2. *Powdery detergent composition according to ~~any one of claims 1 to 3~~ wherein the alkali metal salt of a carboxylic acid is sodium citrate.*
3. *Powdery detergent composition according to claim 1 or 2 wherein the alkali metal salt of a carboxylic acid is present in an amount of from 5% to 15% by weight based on the amount of sodium percarbonate.*
4. *Sodium percarbonate bleaching agent, characterised in that the sodium percarbonate is coated with at least 1 weight percent of a hydroxycarboxylic acid.*
5. *Sodium percarbonate bleaching agent according to claim 4 wherein the hydroxycarboxylic acid is sodium citrate.*
6. *A process for coating a sodium percarbonate bleaching agent with at least 1 weight percent of a hydroxycarboxylic acid, the process comprising coating and drying in one step using a fluid bed drier.*
7. *Use of a hydroxycarboxylic acid for stabilising sodium percarbonate wherein the hydroxycarboxylic acid is used at a level of at least 1% based on the weight of sodium percarbonate.*