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D E C I S I O N
of 25 November 1997

Case Number: T 0304/94 - 3.3.1

Application Number: 88201009.3

Publication Number: 0293040

IPC: C11D 3/39

Language of the proceedings: EN

Title of invention:
Liquid detergent containing solid peroxygen bleach

Patentee:
THE PROCTER & GAMBLE COMPANY, et al

Opponent:
Henkel Kommanditgesellschaft auf Aktien
UNILEVER N.V. / UNILEVER PLC

Headword:
Liquid detergent/PROCTER & GAMBLE

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (yes; after amendment) - non-obvious alternative"

Decisions cited:
-

Catchword:
-

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Case Number: T 0304/94 - 3.3.1

D E C I S I O N
of the Technical Board of Appeal 3.3.1
of 25 November 1997

Party as of right: (Opponent (1))
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Representative:
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Decision under appeal: **Interlocutory decision of the Opposition Division of the European Patent Office posted 16 February 1994 concerning maintenance of European patent No. 0 293 040 in amended form.**

Composition of the Board:

Chairman: A. J. Nuss
Members: J. M. Jonk
R. E. Teschemacher

Facts and Submissions

I. The Appellants (Opponents (2)) lodged an appeal against the interlocutory decision of the Opposition Division by which the European patent No. 0 293 040 (European patent application No. 88 201 009.3) was maintained in amended form.

II. The decision was based on Claims 1 to 12 of the first auxiliary request as submitted on 17 December 1993. Claim 1 of this set of claims read as follows:

"A liquid, bleach containing detergent composition comprising anionic surfactants and having a pH of a least 9, said composition comprising a solid, water-soluble peroxygen compound, suspended in a liquid phase which comprises a solvent system comprising water and at least one water-miscible organic solvent, characterized in that an amount of available oxygen is dissolved in the liquid phase which is not greater than 0.5% by weight of the liquid phase and corresponds to not more than one fifth of the total amount of peroxygen compound in the composition."

III. The opposition was based on Article 100(a) EPC, and supported by several documents including:

(3) DE-A-1 567 583, and

(4) EP-A-0 037 184.

IV. The Opposition Division held that the subject-matter of said claims was novel and involved an inventive step. With respect to inventive step the Opposition Division held that the technical problem underlying the patent in suit was the provision of stable aqueous liquid detergent compositions containing a water-soluble

peroxygen bleach and an anionic surfactant, and that the solution of this problem by using a specific solvent system and adjusting the pH to at least 9 could not be derived from the cited prior art.

V. Oral proceedings took place before the Board on 25 November 1997, at which Opponent (1), who was a party as of right, was not represented, as announced by his letter of 24 September 1997.

VI. The Appellants argued, among others, that the subject-matter of Claim 1 did not involve an inventive step in the light of documents (3) and (4). In particular, they argued that document (3) representing the closest state of the art disclosed stable, liquid detergent compositions having a pH of from 6 to 11, preferably from 7 to 9, and containing suspended sodium perborate as well as a surfactant such as an anionic surfactant. The compositions differed from those as claimed according to the patent in suit essentially in that they did not comprise a solvent system containing an organic solvent such as ethanol. However, in the light of the disclosure of document (4) the addition of ethanol did not involve an inventive step, since it was known from this document that ethanol improved the storage stability of hydrogen peroxide in bleach containing detergent compositions despite the fact that its presence tended to increase the alkalinity of the compositions, i.e. to reduce their stability. Moreover, they submitted that the pH of the compositions could be adjusted such that balanced properties were achieved with respect to stability and washing performance.

VII. The Respondent (Proprietor of the patent) argued essentially that, starting from document (3) as the closest state of the art, the selection of an anionic surfactant, the selection of a high alkalinity and the use of an ethanol containing solvent system was not

obvious to the skilled person in view of the fact that it was known from documents (3) and (4) that these components contributed to hydrogen peroxide instability. In particular, he argued that according to the prior art higher pH values destabilised hydrogen peroxide and that the only example in document (3) which disclosed a composition having a pH above the preferred range of 7 to 9 as indicated in said document, namely a pH of 10.1, provided an unsatisfying stability. He emphasised that the cited documents did not give any incentive to the skilled person that by adjusting a high alkalinity and by reducing the amount of available oxygen in the liquid phase to a certain level as specified in Claim 1 by way of a solvent system of water and an organic solvent such as ethanol a satisfying stability could be achieved.

VIII. After the discussion of the objections against inventive step raised by the Appellants, the Respondent replaced the existing claims by the set of claims according to his third auxiliary request on file, which corresponded to the third auxiliary request as submitted on 17 December 1993.

Claim 1 of this sole request corresponded to Claim 1 as indicated under point II above, except that the pH of the composition was amended to at least 9.5.

IX. With respect to this new Claim 1, the Appellants accepted that its subject-matter was novel. Moreover, having regard to the restriction of the claimed subject-matter, they refrained from disputing the existence of inventive step.

X. The Appellants requested that the decision under appeal be set aside, and that the patent in suit be revoked.

The Respondent requested that the appeal be dismissed and that the patent be maintained on the basis of claims submitted as third subsidiary request on 17 December 1993, with the proviso that Claims 10 and 11 be deleted.

XI. At the conclusion of the oral proceedings the Board's decision was pronounced.

Reasons for the decision

1. The appeal is admissible.

2. Present Claim 1 is based on Claims 1 and 11 of the patent as granted, as well as Claims 1 and 10 of the application as filed.

Present Claims 2 to 8, as well as Claims 12 and 13 correspond to Claims 2 to 8, 12 and 13 of the patent as granted, and to Claims 2 to 8, 11 and 12 of the originally filed patent application.

Present Claim 9 corresponds to Claim 9 of the patent in suit, and is based on page 5, lines 2 and 3, of the originally filed application.

Moreover, the scope of the claims as granted is delimited by incorporating the feature that the composition as claimed as a pH of at least 9.5.

Therefore, the Board concludes that the present claims comply with the requirements of Article 123(2) and (3) EPC.

3. After examination of the cited prior art, the Board has reached the conclusion that the subject-matter as defined in all claims is novel. Since after the limitation of Claim 1 (see point VIII above) novelty was not disputed anymore, it is not necessary to give reasons for this finding.

4. The remaining issue to be dealt with is whether the subject-matter of the present claims involves an inventive step.

4.1 The Board considers, in agreement with the parties, that the closest state of the art with respect to the composition according to present Claim 1 is the disclosure of document (3).

Having regard to the submissions of the parties and the fact that document (3) unambiguously discloses that anionic surfactants are suitable (see page 8, first and second paragraph), in the Board's judgment, the compositions as claimed in present Claim 1 differ from those as disclosed in document (3) by selecting a pH of at least 9.5 and applying a solvent system comprising water and a water-miscible organic solvent so that the amount of available oxygen in the liquid phase is reduced at a level as defined in Claim 1.

Regarding this prior art the Respondent argued that according to the claimed invention further stable liquid detergent compositions comprising a solid peroxide and an anionic surfactant could be obtained.

4.2 Therefore, in the light of the closest prior art, the Board sees the technical problem underlying the patent in suit as the provision of alternative storage stable liquid detergent compositions, containing suspended solid peroxygen compounds and anionic surfactants (see also page 2, lines 49 to 51, of the patent in suit).

4.3 The patent in suit suggests, as the solution to this problem, a composition according to Claim 1, which has a pH of at least 9.5 and comprises an organic component containing solvent system capable of maintaining a low amount of available oxygen in the liquid phase as specified in the claim as essential features.

4.4 In view of the technical information of the patent in suit and the test-report filed by the Respondent on 20 December 1993 (Test-report B), in particular Graphs 1 and 2 showing the effect of the pH on the content of available oxygen and the stability of the compositions tested, the Board is satisfied that the above technical problem is solved. This was never challenged by the Appellants.

4.5 It remains to be decided, whether the requirement of inventive step is met by the claimed compositions.

4.6 As indicated above (see point 4.1), document (3) discloses compositions which do not contain a solvent system as claimed according to the patent in suit. Moreover, although document (3) discloses that the compositions may have a pH of 6 to 11 (see page 5, lines 2 to 4), it also emphasises that at higher alkalinity the danger of loss of oxygen increases (see page 5, the last two lines of the first paragraph). In this respect, Example 6, i.e. the only example applying a pH outside the preferred range of 7 to 9, clearly shows that at a pH of 10.1 a substantial loss of active oxygen compared to those as indicated in the other examples is achieved, namely 7.7% by weight after only one week compared to at most 4.6% by weight after three to eight weeks. Therefore, in the Board's judgment, document (3) does not give any pointer to the skilled person that the technical problem underlying the patent

in suit as defined above could be solved by providing compositions in accordance with present Claim 1 having a pH of at least 9.5.

4.7 Document (4) relates to alkaline aqueous liquid detergent compositions containing hydrogen peroxide instead of a suspended peroxygen compound (see page 4, lines 29 to 33). In particular, it discloses aqueous compositions comprising an anionic surfactant, at least 2% by weight of hydrogen peroxide, and a stabilising system comprising ethanol and/or a polyhydroxy aliphatic carboxylate and a phosphonate (see page 5, lines 3 to 17, and page 16, lines 17 to 36). However, although the experimental results of the examples of document (4) show that the incorporation of ethanol in conjunction with phosphonate or phosphonate/gluconate improves the storage stability of the alkaline compositions (see page 10, lines 10 to 24, and page 29, lines 8 to 14), in the Board's judgment, it cannot be derived from this document that by adding ethanol in combination with the other stabiliser(s) (which are not excluded in present Claim 1) to compositions containing a suspended peroxygen compound as disclosed in document (3) and by raising their pH to values of at least 9.5 an acceptable stability could be achieved since, on the one hand, according to the claimed invention the desired stability is realised **by an appropriate reduction of the solubility of the solid peroxygen compound, i.e. of the available oxygen in solution** and **by selecting a pH of at least 9.5** (see page 2, line 57 to page 3, line 1, and page 3, lines 8 and 9; and Test-report B, Table 1 and both graphs), and, on the other hand, the Appellants did not provide any evidence showing that the features as claimed were not essential to solve the above defined technical problem, and even refrained to dispute inventive step.

4.8 In this context, the Board observes that one may object that a skilled person in view of documents (3) and (4) **could** have used ethanol and a pH of 9.5 or higher since such possibilities were not excluded (see point VI above). However, according to the established case law of the boards of appeal for determining lack of inventive step, it is necessary to show that considering the teaching of the relevant prior art as a whole, without using hindsight based on the knowledge of the claimed invention, the skilled person **would** have arrived at the **claimed solution of the technical problem to be solved**. However, as indicated above, a skilled person, when trying to solve the technical problem underlying the patent in suit and having in mind the detrimental effect on stability of high alkalinities, would not have had any reason to raise the pH of the compositions to values outside the preferred range as indicated in document (3), let alone to values near to a pH of 10.1 which provided a substantial loss of active oxygen (see point 4.6 above).

4.9 In conclusion, the Board finds that the compositions according to present Claim 1 involve an inventive step in the sense of Article 56 EPC.

Since Claims 2 to 9, as well as Claims 12 and 13 (to be renumbered into Claims 10 and 11 respectively) relate to particular embodiments of the compositions claimed in Claim 1, they are also allowable.

Order

For these reasons, it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the first instance with the order to maintain the patent with the following claims and a description yet to be adapted:

   Claims 1 to 9, 12 and 13 according to the third subsidiary request submitted on 17 December 1993.

The Registrar: The Chairman:

E. Görgmaier A. J. Nuss