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**Datasheet for the decision  
of 7 May 2008**

**Case Number:** T 1157/05 - 3.3.06

**Application Number:** 96870145.8

**Publication Number:** 0843001

**IPC:** C11D 3/39

**Language of the proceedings:** EN

**Title of invention:**

Aqueous alkaline peroxygen bleach-containing compositions

**Patentee:**

THE PROCTER & GAMBLE COMPANY

**Opponent:**

Reckitt Benckiser PLC

**Headword:**

Alkaline bleach/PROCTER

**Relevant legal provisions:**

-

**Relevant legal provisions (EPC 1973):**

EPC Art. 56

**Keyword:**

"Inventive step - no"

**Decisions cited:**

-

**Catchword:**

-



Case Number: T 1157/05 - 3.3.06

**D E C I S I O N**  
of the Technical Board of Appeal 3.3.06  
of 7 May 2008

**Appellant:** THE PROCTER & GAMBLE COMPANY  
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**Representative:** Bowers, Craig Malcolm  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 11 July 2005  
revoking European patent No. 0843001 pursuant  
to Article 102(1) EPC 1973.

**Composition of the Board:**

**Chairman:** P.-P. Bracke  
**Members:** P. Ammendola  
D. S. Rogers

## Summary of Facts and Submissions

- I. This appeal is from the decision of the Opposition Division to revoke the European patent No. 0 843 001 concerning a cleaning and bleaching composition containing hydrogen peroxide (hereinafter "HP composition").
- II. The Opponent had sought revocation of the patent in suit on the grounds of lack of novelty and inventive step by relying, *inter alia*, on the following documents:

(1) = US 4,891,147

(2) = US 4,900,468

(3) = WO 93/13012

(4) = WO 96/30484

(5) = US 5,464,552

(6) = US 4,900,469.

- III. During the oral proceedings held before the Opposition Division the Patent proprietor filed a set of amended claims as its main request.

Claim 1 of this set read:

*"1. A stable liquid aqueous cleaning composition having a pH above 8, and comprising from 80% to 99% by weight of the total composition of water, a peroxygen bleach, a radical scavenger, a chelating*

*agent and a pH buffer, wherein said peroxygen bleach is hydrogen peroxide."*

IV. The Opposition Division revoked the patent because none of the amended sets of claims according to the then pending main and auxiliary requests of the Patent Proprietor complied with the requirements of the EPC.

In particular, although claim 1 of the main request was found to comply with Articles 123(2) and 54 EPC, it lacked an inventive step for the skilled person starting from document (3) as the closest prior art. The Opposition division considered that the wording "*consisting essentially of*" in claim 1 of this citation would not exclude some minor amounts of additional components within these prior art compositions. Additionally, document (2) would clearly disclose that the combination of a chelating agent and a radical scavenger, regardless of the pH, would improve the stability of HP compositions. Thus, the claimed subject-matter would be obvious in view of the combination of documents (3) and (2).

V. The Patent Proprietor (hereinafter Appellant) lodged an appeal against this decision and filed with the grounds of appeal as **sole request** a set of claims identical to that forming the main request considered by the Opposition division and whose claim 1 is set out in section III above.

VI. At the oral proceedings before the Board, which took place as scheduled on 7 May 2008 in the presence of both parties, the Opponent (hereinafter Respondent) disputed

the allowability of the Appellant's request exclusively in view of Article 56 EPC.

VII. The Appellant argued on the inventiveness of the claimed subject-matter substantially as follows.

It agreed that the HP compositions disclosed in document (3) represented an appropriate starting point for the inventive step assessment, but maintained that the claimed subject-matter would differ from this prior art not only due to the additional presence of a radical scavenger, but also because the 7 to 9.5 pH range disclosed in document (3) was more neutral than the pH above 8 of the claimed HP compositions.

The Appellant stressed that document (3) was silent not only on the removal of greasy stains, but also on the possibility of adding radical scavengers and on their benefits in terms of chemical and pH stability.

Hence, the technical problem solved by the claimed subject-matter vis-à-vis this prior art would be that indicated in paragraphs 5 and 7 of the patent in suit, i.e. that of providing alkaline HP compositions having improved chemical stability and further improved pH stability, whilst providing improved greasy stain removal performance.

In the Appellant's opinion a skilled person, aiming at solving such a problem, would have recognised that the HP compositions described in document (3) were closed formulations and, thus, already the disclosure of this citation would clearly teach away from the idea of adding further ingredients. In particular, the skilled

person would certainly not add therein radical scavengers, as these compounds would to some extent affect the flash point of the compositions disclosed in this citation.

Moreover, there was a clear distinction within the prior art between acidic HP compositions and alkaline HP compositions. Therefore, the skilled person would not combine the disclosure of document (3) with that of documents (2) or (6), but would confine his researches to the technical field of the closest prior art, i.e. the technical field of alkaline HP compositions.

In any case, the skilled person would also consider the acidic pH as an essential constituent of the system described in documents (2) and (6) for stabilizing the hydrogen peroxide and, hence, would have no reason to specifically choose only the radical scavengers suggested in these citations whilst disregarding the specific acidic pH ranges described therein as mandatory.

The Appellant finally stressed that documents (2) and (6) were totally silent as to the removal of greasy stains.

VIII. The Respondent argued that document (3) did not disclose a closed formulation since the wording "*consisting essentially of*" was intended to exclude only volatile alcohols capable of appreciably influencing the flash point of the composition disclosed in this citation. The Appellant had presented no argument or evidence rendering credible that a similar influence on flash point could also be expected from the conventional radical scavengers, despite the fact that the structure

of these latter is substantially different from that of volatile alcohols.

Moreover, the HP compositions of document (3) would not only be suitable for general purpose cleaning and thus be able to remove greasy stains, but would also possess an alkaline pH, such as the pH of 8.5 present in all the examples in this citation. Hence, the HP compositions exemplified in document (3) would necessarily display the same level of greasy stain removal attributed in the patent in suit to the presence of the buffered pH of more than 8.

The Respondent considered the Appellant's argument that the skilled person would regard the teachings in documents (2) or (6) as confined to acidic HP compositions only as an unsupported allegation lacking credibility.

On the contrary, at least the teaching of document (2) would also appear applicable to compositions with alkaline pH, in view of the pH value of 8 explicitly mentioned therein. Moreover, neither document (2) nor document (6) linked the pH of the compositions disclosed therein to the stabilization effect produced by the radical scavenger or implied that the radical scavengers could be ineffective at other pHs. On the contrary, as confirmed for instance in documents (1) or (5), the skilled person would consider the ability of these ingredient to prevent an attack by free radicals against the other composition ingredients, also operating at an alkaline pH.

IX. The Appellant requested that the decision under appeal be set aside and the patent be maintained on the basis of the set of amended claims filed with the grounds of appeal and a description to be adapted thereto.

The Respondent requested that the appeal be dismissed.

### **Reasons for the decision**

*Inventive step assessment for the subject-matter of claim 1  
(Article 56 EPC)*

1. Claim 1 (see above sections V and III of the Facts and Submissions) describes an HP composition comprising from 80% to 99% by weight of the total composition of water, hydrogen peroxide as peroxygen bleach, a radical scavenger, a chelating agent and a buffer for keeping the pH above 8.

Since the Respondent has only objected to this claim in respect of the presence of inventive step (i.e. it has not disputed the positive findings of the Opposition division that such a claim has a basis in the application as originally filed and is not anticipated in the prior art) and since the Board has found this objection convincing for the reasons given here below, it has not been necessary for the Board to decide whether or not the Appellant's sole request complies with the requirements of the EPC other than that of Article 56 EPC.



1.1 The technical problem addressed by the patent in suit is referred to in its paragraphs 5 and 7. These paragraphs respectively read:

*"It is thus an object of the present invention to provide liquid aqueous peroxygen bleach-containing compositions which are effective in removing greasy stains, which are chemically more stable, and which provide effective disinfecting performance";*

and

*"Indeed, it has surprisingly been found that the combined use of a chelating agent ... ,a radical scavenger ... and a pH buffer ... in an alkaline aqueous peroxygen bleach-containing composition, maintains both the pH and the peroxygen bleach stability upon prolonged storage periods. Furthermore, it has now been found that by formulating such an aqueous peroxygen bleach-containing composition at a pH above 8, comprising a chelating agent, a radical scavenger and a pH buffer, improved greasy stain removal performance is delivered while providing effective disinfecting performance".*

When considering this problem, the Board concurs with the Appellant that a reasonable starting point for the inventive step assessment is represented by the liquid HP compositions of document (3), which are disclosed in this citation as being general purpose bleach and disinfectants that are capable of stain removing and disinfecting e.g. hard surfaces or cloths (see document (3) page 1, lines 15 to 19, with page 6, lines 14 to 21).

- 1.2 The Board finds that the claimed subject-matter only differs from the compositions disclosed e.g. in the examples of document (3) by the presence in the former of a radical scavenger.

The Appellant argued that the different, but overlapping, pH ranges (i.e. "above 8" in the claim 1 under consideration and "from at least 7 to about at least 9.5" in claim 1 of document (3)) represented a further distinction between the claimed subject-matter and the relevant prior art. This argument is found unconvincing in the light of the examples of document (3) wherein the pH is 8.5, i.e. exactly in the overlapping portion between these pH ranges.

- 1.3 The Appellant has also argued that, since document (3) does not explicitly say what sort of stains its HP composition remove, it was credible that the claimed HP compositions achieved a level of grease removal superior to that achieved by the HP compositions of document (3).

The Board is unconvinced by this argument. As indicated above at point 1.1, document (3) expressly specifies that these prior art compositions are suitable for general purpose cleaning. Hence, in the Board's opinion, it is reasonable to presume that these compositions must also be able to remove greasy stains.

Moreover, the HP compositions of document (3) are alkaline and buffered against the downwards drift of the pH (see document (3) claim 1, the examples and page 2, lines 22 to 32). Alkaline pHs are well-known to favour detergency and bleaching (see document (4), page 1, lines 9 to 24). The Appellant conceded at the hearing

before the Board that the patent in suit implicitly indicates in paragraph 42 that the level of greasy stain removal achieved by the claimed compositions is due to the buffered alkaline pH. Hence, the Board considers that the level of cleaning of greasy stains achieved by the alkaline compositions of any of the examples of document (3), wherein the pH is always above 8, must be comparable to that obtainable by the similarly alkaline cleaning compositions according to claim 1.

- 1.4 In the absence of any evidence to the contrary, the Board considers as correct the statement in paragraph 40 of the patent in suit (which is consistent with the description of experimental results in paragraph 92) that attributes a prolonged chemical stability to the presence of the radical scavenger ingredients.

Indeed, this effect also appears consistent with the prior art as to the ability of radical scavengers to prolong the chemical stability of HP compositions by preventing an attack on the less stable chemical components thereof by the hydrogen peroxide decompositions products, i.e. by the free radical species that are formed during the storage of the HP compositions (see document (1) column 7, from line 36 to 47; document (2) column 1, line 60 to column 2, line 3, and column 7, lines 35 to 44; document (5) column 8, lines 13 to 22; document (6) from column 14, line 66, to column 15, line 6).

Accordingly, the Board concludes that the sole technical problem credibly solved by the claimed subject-matter vis-à-vis the cleaning and bleaching HP compositions of

document (3) is that of **improving their chemical stability.**

1.5 Under such circumstances the inventive step assessment boils down to the question as to whether or not the skilled person would have added a radical scavenger to the prior art HP compositions in the reasonable expectation of achieving an improvement in their chemical stability.

1.6 The Board notes that, as observed by the Respondent, both documents (2) and (6) teach that adding a radical scavenger to HP compositions results (possibly through a synergistic effect with the chelating agent) in an improvement of the chemical stability of the ingredients thereof that can be more easily attacked by free radicals (see document (2) column 2, lines 40 to 46 and 58 to 63, in combination with the disclosure from column 3, line 49, to column 4, line 53; similar teachings are contained in document (6) from column 14, line 43 to column 15, line 10).

Hence, the Board concludes that the teaching of any of documents (2) or (6) would suggest to the skilled person to solve the posed problem by adding a radical scavenger to the HP compositions exemplified in document (3).

1.7 The Appellant has presented the following arguments against such conclusion:

a) the HP compositions of document (3) would be closed formulations, hence this citation would teach away from the idea of adding any further ingredient, such as the

radical scavengers, which would certainly affect the flash point of such compositions;

b) even in the hypothetical case that the skilled person could consider the idea of adding a further ingredient to the neutral or alkaline HP compositions of document (3), no suggestion to modify such prior art could be derived from documents (2) or (6), since these latter citations belong to the different technical field of acidic HP compositions,

and

c) even if the skilled person would nevertheless consider the disclosure of documents (2) or (6), he would still have no reason for only deriving from such documents the addition of the radical scavenger and not also the use of an acidic pH which also contributes to the improved chemical stability of the compositions disclosed in these citations.

The Board finds these arguments unconvincing for the reasons indicated here below.

- 1.7.1 In respect to argument "a)" the Board notes that, as pointed out by the Respondent, the formulation of claim 1 of document (3), wherein the HP composition is defined as "*consisting essentially of*" the ingredient listed in such claim, is to be interpreted in the context of the whole disclosure provided by the document. In particular, the Board notes that a restrictive interpretation of the expression "*consisting essentially of*" - i.e. as equivalent to "*consisting exclusively of*" - can be excluded because the examples in document (3)

indicate the possible presence of further ingredients (namely perfume, fragrance and/or alkyl dimethyl amine oxide). Moreover, as conceded by the Appellant, it is apparent that the intended meaning of this expression is that referred to on page 5, lines 23 to 26, in combination with page 2, lines 10 to 17, of document (3), i.e. the meaning of excluding only those ingredients, such as the volatile alcohols ethanol and isopropanol, which may result in an unacceptable lowering of the composition's flash point.

The Appellant has also alleged that the radical scavenger would fall under this exclusion. However, the Board cannot accept, in the absence of any supporting evidence, that the compounds mentioned in the patent in suit or in the available prior art as radical scavengers, all of which are much less volatile than ethanol or isopropanol, might appreciably decrease the flash point of the HP compositions of document (3).

Therefore, the Board concludes that this citation does **not** teach the skilled person away from the possibility of adding to the compositions disclosed therein either, in general, a further ingredient, or, specifically, a conventional radical scavenger.

- 1.7.2 The Board also finds unconvincing the Appellant's argument indicated above at "b)", that the skilled person would regard the technical field of alkaline HP compositions as being distinct from that of acidic HP compositions and thus would not search for a solution to the problem of chemical stability of the compositions of document (3) in the technical field of acidic HP compositions to which documents (2) or (6) belong.

The Board first notes that the argument is a mere allegation and has been disputed by the Respondent.

Moreover, the contrary seems to be the case as the skilled person is aware that a spontaneous downwards pH drift tends to change an alkaline HP composition into a neutral and possibly an acidic one.

Finally, while document (6) only discloses acidic HP compositions, the upper part of the composition pH range disclosed in document (2) reaches the value of 8, i.e. a moderately alkaline pH. Hence, even in the presence of the alleged prejudice that the field of alkaline HP compositions would be considered totally distinct from that of acidic HP compositions, the Board has before it document (2) which necessarily belongs to both these technical fields.

Hence, the Appellant has failed to convince the Board that the skilled reader of document (3) would not take into consideration document (2) or document (6), for the sole reason that these deal mainly (document (2)) or exclusively (document (6)) with acidic HP compositions.

- 1.7.3 In respect of the Appellant's argument "c)" above, the Board notes that neither in document (2) nor in document (6) is it indicated that the specific pH of the compositions disclosed therein is required for the chemical stabilization produced by the chelating agent and the radical scavenger.

On the contrary, it is evident from the passages in documents (2) and (6) (see point 1.6) that document (2)

only suggests that the stabilization produced by the radical scavenger may be amplified by a synergistic effect with the chelating agent, whereas document (6) explicitly indicates that these two ingredients may act as stabilizers in combination as well as when used separately. Hence, nothing in these citations appears to link the stabilizing effect of the radical scavenger to the pH.

Finally, the Board accepts the argument of the Respondent that the skilled person would consider the stabilization mechanism disclosed in documents (2) and (6) also operating at an alkaline pH. This is consistent with the disclosure contained in documents (1) or (5) (see point 1.4) which, even though it deals with heterogeneous compositions, nevertheless expressly hypothesize the same stabilization effect of radical scavengers in an aqueous alkaline phase.

- 1.8 Therefore, the Board concludes that the skilled person aiming at solving the posed problem would have searched **in the whole domain of HP compositions for bleaching and cleaning**, i.e. independently of the pH thereof, the means to improve chemical stability of the aqueous formulations of document (3). This person would have then found in document (2) (or in document (6)) a detailed explanation on how the scavenging of free radicals improves the chemical stability of similar acidic HP formulations. Since it would be apparent to the skilled person that this stabilization prevents a degradation mechanism that takes place in these acidic compositions independently of pH, he would necessarily conclude that the same degradation must also occur in the alkaline formulations of document (3). This would



have prompted the skilled person to solve the posed technical problem by adding conventional radical scavengers in the aqueous formulations exemplified in document (3), thereby arriving at the presently claimed HP compositions.

Thus, the subject-matter of claim 1 according to the sole request of the Appellant does not involve an inventive step. Hence, this claim does not comply with the requirements of Articles 52(1) and 56 EPC and, therefore, the Appellant's request is not allowable.

## **Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

M. Schalow

P.-P. Bracke