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DECISION
of 28 August 2003

Case Number: T 0521/99 - 3.3.6

Application Number: 90202851.3

Publication Number: 0427314

IPC: C11D 3/39

Language of the proceedings: EN

Title of invention:
Bleaching composition

Applicants/Patentees:
UNILEVER N.V., et al

Opponents:
PROCTER & GAMBLE EUROPEAN TECHNICAL CENTER N.V.
Joh. A. Benckiser GmbH

Headword:
Bleaching composition/UNILEVER

Relevant legal provisions:
EPC Art. 123(2), 56

Keyword:
"Main request: allowable amendment (no) - added subject-matter"
"First auxiliary request: inventive step (yes) - non obvious modification of the prior art."

Decisions cited:
-

Catchword:
-



Case Number: T 0521/99 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 28 August 2003

Appellants:
(Proprietors of the
patent)

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Decision under appeal:

**Decision of the Opposition Division of the
European Patent Office posted 3 March 1999
revoking European patent No. 0427314 pursuant
to Article 102(1) EPC.**

Composition of the Board:

Chairman: P. Krasa
Members: P. Ammendola
C. Rennie-Smith

Summary of Facts and Submissions

I. This appeal is from the decision of the Opposition Division revoking European patent No. 0 427 314 concerning bleaching compositions. Granted claim 1 is identical to that of the corresponding European patent application and reads:

"1. Stable bleaching composition comprising a persalt and a bleach activator, characterised in that it comprises essentially:
(a) from 10% to 90% by weight of sodium percarbonate;
(b) from 4% to 40% by weight of a bleach activator; and
(c) from 5% to 85% by weight of an alkali metal bicarbonate, an alkali metal sesquicarbonate or an alkali metal dihydrogen orthophosphate,
wherein the ratio by weight of component (a) to (b) is not less than 4:5 and the ratio by weight of component (c) to (b) is not less than 5:4, with the proviso that, if component (b) is present at a level of more than 8%, the amount of component (c) should be at least 20%."

The remaining granted claims 2 to 7 are all dependent claims.

II. The Respondents I and II (Opponents I and II) filed notices of opposition based on lack of inventive step (Article 100(a) in combination with Articles 52(1) and 56 EPC). Respondent II cited also lack of novelty and insufficiency of disclosure as grounds of opposition (Article 100(a) in combination with Articles 52(1) and 54 EPC and Article 100(b) EPC).

Respondent I filed under cover of a letter dated 22 December 1998 the following documents:

Document (10) = English translation of JP-A-54 163906

Document (13a)= DE-A-2 417 572

III. The Opposition Division held that Respondent II had not substantiated insufficiency of disclosure and therefore did not consider that ground of opposition.

It considered *inter alia* that three different meanings were to be attributed to the expression "comprises essentially (a)...,(b)... and (c)..." in original claim 1 and, therefore, three different possibilities existed as to which amounts of optional components were embraced by the definition of granted claim 1.

The Opposition Division also found that the patent in suit was aiming at compositions displaying improved storage stability but concluded that the bleaching compositions claimed in the auxiliary requests filed by the Appellants during the opposition proceedings provided no credibly demonstrated advantage over the prior art compositions based on pre-heated or coated percarbonate and were obvious in view of the prior art disclosed in Document (10). In particular, it found that the person skilled in the art would, without exercising any inventive skill, slightly increase the amount of bleach activator in the compositions of examples 1 or 4 of Document (10), which differed from those claimed in the patent as granted only in that the amount of bleach activator was 3% rather than 4% by weight.

IV. The Appellants (Patent Proprietors) appealed against this decision and filed with the grounds of appeal three new sets of amended claims as main and first and second auxiliary requests (these requests are in the following designated as the "initial" main and auxiliary requests).

Claim 1 of the initial main request differed from the granted one (see above point I) only in that the original wording "*comprises essentially*" had been substituted by "*consists of*" and by the addition after the term "*orthophosphate,*" of the wording "*and (d) optionally up to 10% by weight of other components,*"

In their letter dated 25 July 2003 they also filed additional experimental data too.

V. At the oral proceeding which took place before the Board on 28 August 2003 neither of the Respondents was represented.

The absence of Respondent I had been previously repeatedly announced - the last time in its letter of 28 July 2003 - while Respondent II informed neither the Board nor the other parties of its intention not to appear.

VI. During the oral proceedings the Appellants withdrew all previous requests and filed six sets of amended claims as main and first to fifth auxiliary requests, as well as a description adapted to the claims of the first auxiliary request.

Claim 1 of the main request differs from the granted one only in that the original wording "*comprises essentially*" has been substituted by "*consists of*" and by replacing "*orthophosphate, wherein*" by "*orthophosphate; and (d) optionally up to 10% by weight of ingredients normally used in detergent or bleach compositions, so long as their presence does not affect the stability properties of the composition, wherein*".

The first auxiliary request comprises 5 claims. Claim 1 therein differs from that of the main request only in that it additionally comprises in the definition of component (d), immediately after the words "...*stability properties of the composition,*", the wording "*wherein if (c) is sodium bicarbonate then these ingredients may not include sodium carbonate,*".

Claims 2 and 3 of this auxiliary request are identical to the granted ones, while claims 4 and 5 are identical to filed and granted claims 6 and 7 except for amended dependencies to reflect the deletion of original claims 4 and 5.

The amended description filed at the oral proceedings is substantially identical to that of the patent as granted except for:

- an amendment at page 2 at line 42 of the definition of the claimed composition so as to correspond literally to the wording of claim 1 of the first auxiliary request,
- the indication that the compositions comprising both sodium carbonate and sodium bicarbonate

disclosed in the sentence at page 3 starting at line 7 and ending at line 10 are "unclaimed" compositions and

- the deletion of the compositions comprising both sodium bicarbonate and sodium carbonate disclosed at page 2 from line 14 to line 28 and in composition nr. 2 of table 2, as well as the corresponding change of composition numbering in table 2 and in the related text in example 2.

VII. At the oral proceedings the Appellants maintained that the basis for the definition of component (d) in both claim 1 of the main request and in claim 1 of the first auxiliary request was to be found in the disclosure at page 4, lines 24 to 30, of the application as filed.

With regard to the question of non-obviousness the Appellants submitted in writing *inter alia* that none of the available citations addressed specifically the technical problem of self-heating addressed in the patent in suit. They stressed that, when percarbonate-containing compositions comprised a bleach activator, then in addition to the exothermic decomposition of the percarbonate which liberated hydrogen peroxide, further heat was produced by the exothermic reaction of this by-product with the bleach activator, thereby allegedly producing a high risk of self-heating during factory handling of these compositions.

At the oral proceedings the Appellants conceded that the only technical problem credibly solved by compositions of claim 1 of the first auxiliary requests vis-à-vis those of Document (10) was that of providing

further stable percarbonate-based bleaching compositions comprising bleach activators, but argued that the person skilled in the art would not increase the content of bleach activators in the compositions of the prior art, since these ingredients were reasonably expected to affect the composition's stability.

VIII. Respondent I did not raise any objection in respect of the patentability of the subject-matter of the claims according to the initial main and initial auxiliary requests of the Appellants.

Respondent II did not contest the novelty of the subject-matter of the claims of the Appellants' initial requests (see above point IV) but maintained that none of the possible meanings correctly attributed in the decision under appeal to the original wording "*comprises essentially (a)...,(b) and (c)...*" could be considered as implicitly disclosing that components (a) to (c) would inevitably constitute at least about 90% by weight of the composition.

With regard to the assessment of inventive step, Respondent II relied on the reasons given in the decision under appeal and additionally submitted that the Appellants provided no convincing evidence that the patented compositions had better stability properties than the prior art compositions, in particular those containing stabilized percarbonate.

Also Respondent II recognised that not only the percarbonate decomposition but also the reaction between the hydrogen peroxide produced in such

decomposition and the bleach activator were generally known to be exothermic.

- IX. The Appellants requested that the decision under appeal be set aside and that the patent be maintained in accordance with the main request or alternatively one of the first to fifth auxiliary requests filed during the oral proceedings.

Respondent I requested in writing that the patent not be maintained as granted.

Respondent II requested in writing that the appeal be dismissed.

Respondent I also requested in writing that he receive an appropriate notification and a specific invitation to the oral proceedings should the Board be inclined to admit claims whose subject-matter was broader than that of the initial main request filed by the Appellants with the grounds of appeal.

- X. At the end of the oral proceedings the Chairman announced the decision of the Board.

Reasons for the Decision

Main request

1. *Article 123(2) EPC*
- 1.1 Claim 1 of this request differs from the originally filed and granted claim 1 in that it specifies that the

only optional components which may be present in addition to the mandatory components (a) to (c) are exclusively further conventional bleach or detergent ingredients (d) in an amount of up to 10% by weight.

- 1.2 The Appellants maintained that the basis for the definition of component (d) in present claim 1 was to be found in the disclosure at page 4, lines 24 to 30, of the application as filed, which reads:
"Though not essential, the composition of the invention may further contain minor amounts of any known ingredients normally used in detergent or bleach compositions up to a level of about 10%...so long as their presence does not affect the stability properties of the composition."

- 1.3 The Board observes that this definition of the conventional bleaching or detergent ingredients which may be contained in the bleaching compositions "*up to a level of 10% by weight*" implicitly excludes such of those ingredients which have already been disclosed in the portions of patent description **preceding** such sentence (see "*may further contain*" in the above quoted sentence) and in particular those which have been identified as **essential** (see "*Though non essential*" in the above quoted sentence).

For instance, it is undisputed that the mandatory components (a) to (c) as defined in original page 3 of the application as filed are implicitly excluded from the optional component definition in the above quoted sentence. Otherwise the concentration ranges given in claim 1 (in particular their upper limits) would be meaningless.

1.4 However the Board observes that the sentence on page 4 relied upon by the Appellants is immediately preceded by the wording:

"Apart from the above components, the bleaching composition of the invention may additionally contain sodium carbonate, **as partial replacement for sodium bicarbonate**. It has been found that sodium carbonate used at a level up to equal the amount of sodium bicarbonate does not affect the stability properties of the composition." (see page 4, lines 18 to 24 of the application as filed, emphasis added by the Board).

The Board finds therefore that, as with components (a) to (c), sodium carbonate is also:

- (a) disclosed in the portion of the application as filed **preceding** the above quoted sentence and
- (b) defined therein as forming part of an alternative formulation of the **essential** component (c) in the bleaching compositions comprising sodium bicarbonate.

The Board thus finds that according to the application as filed the bleaching compositions **comprising sodium bicarbonate** cannot also comprise sodium carbonate as an optional ingredient in an amount of up to about 10% by weight, but only as part of the mandatory component (c).

1.5 Present claim 1 provides instead a definition of component (d) encompassing an amount of up to 10% by

weight of the composition of any conventional detergent or bleach ingredients different from (a) sodium percarbonate, (b) a bleach activator and (c) an alkali metal bicarbonate, sesquicarbonate or dihydrogen orthophosphate, in unrestricted combination with any of these three latter possible alternatives for component (c). Sodium carbonate is indisputably a conventional detergent or bleach ingredient. However, its presence as component (d) in bleach compositions containing sodium bicarbonate in amounts independent of that of the latter is contrary to the disclosure of the application as filed for the reasons given above. Thus, the application as filed does not provide a basis for the definition of component (d) as given in claim 1 of this request.

Therefore, the Board concludes that the subject-matter of this claim does not comply with the requirements of Article 123(2) EPC and thus that the main request is not allowable.

First auxiliary request

2. *Article 123(2) EPC*

2.1 Claim 1 of this request differs from that originally filed and granted in that it specifies:

- that the only optional components which may be present in addition to the mandatory components (a) to (c) are exclusively further conventional bleach or detergent ingredients (d) in an amount of up to 10% by weight and

- that the optional ingredients (d) cannot be sodium carbonate in case the compositions comprise sodium bicarbonate.

Thus, the amendments result in the restriction of the claimed subject-matter to the specific embodiments of the compositions defined in claim 1 as granted which are disclosed in the sentence at page 4, lines 24 to 30 of the application as filed (see above points 1.2 to 1.4).

Therefore, the Board comes to the conclusion that claim 1 according to the first auxiliary is based on the disclosure of the original patent specification and, thus, complies with the requirements of Article 123(2) EPC.

- 2.2 The Board is also satisfied that the amendments carried out in the dependent claims and in the patent description (see point VI of the Facts and Submissions) cannot possibly introduce additional subject-matter. Therefore, the dependent claims and the amended description of the first auxiliary request are also found to comply with the requirements of Article 123(2) EPC.

3. *Articles 123(3) and 84 EPC*

- 3.1 Present claim 1 explicitly requires that the amount of optional components may add up to not more than 10% by weight, while claim 1 as granted did not define explicitly or implicitly an upper limit for the amount of non-essential components. Hence, the introduction of the definition of component (d) clearly renders the

subject-matter of the present claim 1 and also, by virtue of their dependency on claim 1, of all the other present claims more restricted than that of the corresponding granted claims.

The wording of the amended claims is also clear. Moreover, the submissions of Respondent II and the findings in the decision under appeal as to the possible meanings for the initial expression "*it comprises essentially...(a)...(b)...and (c)...*" which was present in granted claim 1, are no longer relevant since in present claim 1 this expression has been substituted by the unambiguous "*it consists of...(a)...,(b)...,(c)...and (d)...*".

3.2 The Board also finds that the amendments of the patent description (see above point VI of the Facts and Submissions) could not possibly result in an extension of the protection conferred by the claims nor introduce any lack of clarity.

3.3 Therefore, the Board concludes that the subject-matter of the claims of the first auxiliary request and the correspondingly amended description comply with the requirements of Article 123(3) EPC and of Article 84 EPC in respect of the clarity of the claims.

4. *Novelty of the subject-matter of claim 1 (Articles 52(1) and 54 EPC)*

The Board is satisfied that the subject-matter of claim 1 according to this request is novel vis-à-vis the state of the art.

Since the novelty of the subject-matter of the claims of the Appellants' initial requests has not been contested by the Respondents and since the subject-matter of this request is clearly narrower than that of the initial main request (see above point IV of the Facts and Submissions) no further reasons need be given.

5. *Inventive step of the subject-matter of claim 1 (Articles 52(1) and 56 EPC)*

5.1 The subject-matter of claim 1 of this request is a stable bleaching composition characterized substantially in that at least 90% by weight thereof is constituted by a mixture of sodium percarbonate, a bleach activator and an alkali metal bicarbonate, sesquicarbonate or orthophosphate in the specified relative amounts.

The patent in suit discloses that the claimed composition has satisfactory stability properties (see page 2, lines 55 to 56, page 5, lines 24 to 28 and lines 49 to 50), in particular in relation to the technical problem of self-heating in factory handling which occurs in bleaching compositions rich in percarbonate and containing a bleach activator (see page 2, lines 34 to 36).

5.2 The Appellants argued that the prior art documents considered relevant in the decision under appeal for the assessment of inventive step did not specifically address the technical problem of **self-heating in factory handling** of percarbonate-based compositions which contain a bleach activator (but only that of **the**

percarbonate decomposition responsible for the loss of bleaching activity upon storage) and were therefore unsuitable as starting point for the assessment of inventive step.

- 5.3 The Board however observes that the patent description (see page 2, lines 24 to 41) confirms that the inventors of the patent in suit considered that their percarbonate compositions offered better stability against decomposition than the percarbonate compositions of the relevant prior art.

This is clearly consistent with the undisputed fact that percarbonate decomposition is an **exothermic** reaction whose hydrogen peroxide by-product may further **exothermically** react with the bleach activator (see above points VII and VIII of the Facts and Submissions). Since percarbonate decomposition is clearly encouraged by heat (see e.g. Document (10), page 2, lines 21 to 25 and Document (13a), page 3, lines 15 to 18), it is also self-evident to the skilled person that the occurrence of percarbonate decomposition in the presence of bleach activators clearly encourages self-heating.

Therefore, the Board comes to the conclusion that, in the absence of prior art specifically disclosing means for reducing the self-heating risk in factory handling of percarbonate-based compositions which contain a bleach activator, the skilled artisan would have considered the most relevant prior art to be those compositions already known to be effectively stabilized at least against percarbonate decomposition.

5.4 Of the cited documents of this technical field, only Document (10) - which is the prior art specifically cited also at page 2, lines 28 to 33, of the patent in suit - discloses stabilized bleaching compositions mostly formulated from those three components whose amounts, according to present claim 1, must add up to at least 90% by weight of the composition. As a matter of fact, Examples 1 and 4 of Document (10), comprise:
20% by weight of thermally treated percarbonate (corresponding to component (a) of present claim 1);
3% by weight of glucose pentaacetate (corresponding to component (b)); and
40% by weight of sodium bicarbonate (corresponding to component (c)).

Hence, the Board concludes that the compositions disclosed in these examples of Document (10) represent the most appropriate starting point for the assessment of inventive step.

5.5 The Board finds that, as maintained by Respondent II and also as conceded by the Appellants at the oral proceedings, the only technical problem credibly solved by the claimed compositions vis-à-vis these two examples of Document (10) is to provide further stabilized percarbonate-based bleaching compositions comprising a bleach activator.

5.6 The Board observes that, although not preferred, the compositions of claim 1 may comprise thermally treated percarbonate as component (a) and up to 10% by weight of acidic substances as component (d) (see in the patent in suit, page 2, lines 51 to 54 and 57 to 58,

and page 3, lines 52 to 53). Hence the claimed compositions differ essentially from those disclosed in the examples of Document (10) in that the amount of the components other than (a) to (c) must be in the range of from 0 up to 10% by weight and in that the amount of component (b) - i.e. of the bleach activator - must be at least 4% by weight.

Therefore, in the present case the assessment of inventive step boils down to the question of whether the person skilled in the art of percarbonate bleaching compositions would, in trying to solve the existing technical problem, have modified the compositions of the examples 1 and 4 of Document (10), so that the amount of the components different from (a) to (c) as defined in present claim 1 is reduced to 10% by weight or less and so that the amount of component (b) is at least 4% by weight, in the reasonable expectation that such modified compositions would also have a level of stability comparable to that of those prior art compositions.

- 5.7 Claim 1 of Document (10) requires in addition to sodium percarbonate and an alkali metal salt, i.e. two ingredients which are also essential in the composition of present claim 1, the mandatory presence of an acidic substance, such as succinic acid, and limits the proportion by weight between the bicarbonate and the acidic substance to 5.0 at most (see e.g. claims 1 to 3 of Document (10)). In particular, the **minimum amount** disclosed in this prior art for the acidic substance in bleaching compositions is 10% by weight (see page 4, line 8 from the bottom) while the preferred maximum amounts disclosed for the percarbonate and the

bicarbonate are 30% and 50% by weight, respectively (see page 4, lines 20 to 29).

To modify the compositions of examples 1 or 4 of Document (10) (see above point 5.4) in order to arrive at a composition satisfying the definition of ingredient (d) of present claim 1, it is thus in any case necessary to reduce the amount of acidic substance (mandatory in Document (10)) to the minimum value of 10% by weight disclosed there.

On the other hand, the mandatory limit of 5.0 for the bicarbonate/acidic substance proportion by weight implicitly limits to 50% by weight the maximum amount of component (c) which may be present when the amount of acidic component is 10% by weight. This is also in line with the maximum value of 50% by weight disclosed in the specification of Document (10).

Similarly, the maximum amount of component (a) disclosed in Document (10) is 30% by weight. Therefore, even if one maximizes in the compositions of examples 1 or 4 of Document (10) the amount of component (a) (i.e. from 20 to 30% by weight) and that of component (c) (i.e. from 40% to 50% by weight), it always remains necessary not only to reduce the amount of acidic substance to 10% by weight but also to increase the amount of percarbonate activating agent from 3% **to at least 10% by weight** in order to adapt the compositions of these examples to a composition satisfying the definition of ingredients (d) and (b) in present claim 1.

5.8 Document (10), apart from the above discussed compositions of examples 1 and 4, does not provide any direct or indirect information as to the possible amounts of bleach activator in the bleaching composition.

The Board also observes that the widely-known exothermic nature of the reaction of the bleach activator with hydrogen peroxide is undisputed by the parties (see above points VII and VIII of the Facts and Submissions) and that it is self-evident that heat favours percarbonate decomposition (see above point 5.3 of the Reasons).

Therefore, the Board concludes that the person skilled in the art, attempting to modify examples 1 and 4 of Document (10) into further percarbonate-bleaching compositions stabilized against percarbonate decomposition, would **not triple or increase even more** the concentration of a compound which is indisputably recognised as likely to release heat by reacting with the percarbonate decomposition products and, hence, encourage further additional percarbonate decomposition.

5.9 The Board therefore finds that the subject-matter of claim 1 of the first auxiliary request provides a non-obvious solution to the existing technical problem and hence complies with the requirements of Articles 52(1) and 56 EPC.

6. Novelty and inventive step of the subject-matter of claims 2 to 5.

The dependent claims 2 to 5 of the first auxiliary request define preferred embodiments of the bleaching composition of claim 1 and therefore their subject-matter is found to comply with the requirements of Articles 52(1), 54 and 56 EPC for the same reasons given above for the subject-matter of claim 1.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is to be maintained with the claims of the first auxiliary request and the entire description as adapted, both filed during the oral proceedings.
3. The case is remitted to the first instance with the instruction to act accordingly.

The Registrar:

The Chairman:

G. Rauh

P. Krasa