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Datasheet for the decision of 25 September 2006

Case Number: T 0253/05 - 3.3.06

Application Number: 95905359.6

Publication Number: 0736085

IPC: C11D 3/386

Language of the proceedings: EN

Title of invention:
Detergent compositions containing percarbonate and amylase

Patentee:
THE PROCTER & GAMBLE COMPANY

Opponent:
Unilever N.V.
HENKEL KGaA

Headword:
Percarbonate based enzymatic detergent compositions/PROCTER & GAMBLE

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

Keyword:
"Added subject-matter (no)"
"Inventive step (yes): synergistic effect convincingly proved - prior art not suggesting the selection of the features of claim 1 for obtaining the seeked improvement"

Decisions cited:
-

Catchword:
-

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Case Number: T 0253/05 **-** 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 25 September 2006

Appellant 01: (Patent Proprietor)
THE PROCTER & GAMBLE COMPANY
One Procter & Gamble Plaza
Cincinnati, OH 45202 (US)

Representative:
Samuels, Lucy Alice
GILL JENNINGS & EVERY
Broadgate House
7 Eldon Street
London EC2M 7LH (GB)

Appellant 02: (Opponent 01)
UNILEVER N.V.
Weena 455
NL-3013 AL Rotterdam (NL)

Representative:
Kan, Jacob Hendrik
Unilever Patent Group
Olivier van Noortlaan 120
NL-3133 AT Vlaardingen (NL)

Appellant 03: (Opponent 02)
HENKEL KGaA
VTP (Patente)
D-40191 Düsseldorf (DE)

Representative:
-

Decision under appeal:
Interlocutory decision of the Opposition Division of the European Patent Office posted 12 January 2005 concerning maintenance of European patent No. 0736085 in amended form.

Composition of the Board:

Chairman: P.-P. Bracke
Members: L. Li Voti
J. Van Moer

Summary of Facts and Submissions

I. The present appeal is from the decision of the Opposition Division to maintain in amended form the European patent No. 0 763 085, concerning an enzymatic detergent composition containing percarbonate.

II. In their notices of opposition the Opponents 01 and 02 sought revocation of the patent on the grounds of Article 100(a), because of lack of novelty and inventive step of the claimed subject-matter, and of Article 100(c) EPC and referred *inter alia* to the following document:

(1): DE-A-1940654.

The Patent Proprietor filed in the course of the written proceedings the following document

(15): US-A-3637339.

III. In its decision, the Opposition Division found *inter alia* that

- the claims according to the then pending first auxiliary request complied with the requirements of Article 123(2) EPC and were novel over the cited prior art;

- the experimental evidence contained in the patent in suit and that submitted with the letter dated 10 November 2004 showed that the claimed combination of percarbonate, protease and amylase brought about a synergistic improvement of the stain removal capacity

of the enzymatic detergent composition and thus solved the technical problem underlying the claimed invention;

- the only cited document dealing with the technical problem underlying the claimed invention was document (15) which had thus to be selected as starting point for the assessment of the inventiveness of the claimed subject-matter;

- the prior art did not contain any teaching that would have prompted the skilled person to replace the perborate bleach used in document (15) with a percarbonate or to use ratios of bleach to protease and amylase according to the patent in suit in order to obtain a synergistic removal of starch-based, blood and particulate stains;

- the subject-matter of the claims according to the first auxiliary request thus complied with the requirements of the EPC.

IV. An appeal was filed against this decision by the Patent Proprietor (Appellant 01) and by both Opponents (Appellants 02 und 03).

Appellant 01 submitted with the grounds of appeal three sets of claims according to the main request and to the first and second auxiliary request, respectively, and cited additionally the following document:

(17): GB-A-1466799.

An experimental report with attachments 3 and 4 and sets of claims according to auxiliary requests 3 to 7

were filed by Appellant 01 with the letter of 12 December 2005.

Oral proceedings were held before the Board on 25 September 2006.

During oral proceedings Appellant 01 withdrew the main and the first auxiliary request filed with the grounds of appeal. The second auxiliary request filed with the grounds of appeal became Appellant 01's main request.

V. The set of 12 claims according to the main request comprises an independent claim 1 reading as follows:

"1. A granular detergent composition comprising an alkali metal percarbonate and an amylase enzyme at a weight ratio of percarbonate (expressed as 13.5% AvOx) to amylase (expressed on an activity of about 60 KNU/g) in the range of from 1:2 to 300:1, characterised in that the composition comprises from 1% to 40% by weight of the composition of an anionic surfactant, a protease in a weight ratio of percarbonate (expressed as 13.5% AvOx) to protease (expressed on an activity of about 4 KNPU/g) of from 1:2 to 10:1; wherein the percarbonate has a coating consisting of (a) mixed salt of alkali metal sulphate and carbonate, or (b) sodium silicate of SiO_2:Na_2O ratio from 1.6:1 to 2.8:1, or (c) magnesium silicate."

Dependent claims 2 to 7 relate to specific embodiments of the composition of claim 1; claims 8 to 11 relate to methods for removing specific stains from textiles by treating them with the composition of claim 5.

Independent claim 12 reads as follows:

"12. A method according to claims 8, 9, 10 or 11 whereby the detergent composition is put in a reusable dispensing device together with the clothes to be washed."

VI. The Appellants 02 and 03 submitted in writing and orally *inter alia* that

- claim 1, relating to a percarbonate having a coating of a mixed salt of alkali metal sulphate and carbonate, contravened the requirements of Article 123(2) EPC since it did not specify the type of mixed salt used and the ratio of mixed salt to percarbonate as given in the description;

- moreover, the application as originally filed did not disclose a method wherein a detergent composition containing a percarbonate having a coating as specified in claim 1 was put in a reusable dispensing device together with the clothes to be washed.

As regards the inventiveness of the claimed subject-matter they submitted that

- the closest prior art was represented by document (1) relating to the same technical problem underlying the claimed invention and disclosing in example 6 a composition differing from the claimed one only insofar as the percarbonate bleach used had a different coating;

- the experimental evidence contained in the patent in suit and that submitted with the letter dated

10 November 2004 at first instance did not relate to a composition having all the features of claim 1;

- the experimental evidence filed with the letter of 12 December 2005, which related to compositions having all the features of claim 1, was not consistent with that previously filed at first instance;

- the evidence submitted did not contain a complete specification of the detergent formulation on which the tests were carried out and it had thus not been possible to rework the tests;

- therefore, the submitted experimental evidence had to be disregarded;

- it would have been obvious for the skilled person to replace the percarbonate coating used in document (1) with other known coatings currently used for a percarbonate bleach at the priority date of the patent in suit, for example, a coating as disclosed in document (17);

- the claimed subject-matter thus lacked an inventive step.

VII. Appellant 01 submitted in writing and orally *inter alia* that

- the amendments to the claims complied with the requirements of Article 123(2) EPC;

- the correct starting point for the assessment of inventive step was document (15) since it was the only

cited document dealing with the improvement of the stain removal performance of enzymatic compositions;

- the experimental evidence contained in the patent in suit as well as that filed with the letter dated 10 November 2004 and that submitted with the letter of 12 December 2005 showed that the claimed invention brought about a synergistic improvement of the removal of difficult stains, such as starch-based, blood and particulate stains;

- the prior art did not contain any suggestion that the use of a percarbonate bleach at selected ratios with protease and amylase could bring about such a synergistic effect even at low temperature;

- moreover, document (1) taught to coat the peroxygen bleach, e.g. percarbonate, with a specific water-insoluble coating in order to improve the cleaning efficiency of the enzymatic detergent composition;

- therefore, it would have not been obvious for the skilled person to replace the percarbonate coating of document (1) with other known coatings, e.g. a coating according to document (17), with the expectation of maintaining or improving the stain removal performance of the enzymatic detergent composition;

- the claimed subject-matter thus involved an inventive step.

VIII. Appellant 01 requests that the decision under appeal be set aside and the patent be maintained, as a main request, on the basis of the set of claims according to

the request filed as second auxiliary request with the statement of grounds of appeal or, in the alternative, on the basis of auxiliary requests 3 to 7 filed with letter of 12 December 2005.

IX. Appellants 02 and 03 request that the decision under appeal be set aside and that European patent No. 736 085 be revoked.

Reasons for the Decision

1. Appellant 01' Main request

1.1 *Article 123(2) EPC*

1.1.1 Claim 1 according to the main request relates to a granular detergent composition containing an alkali metal percarbonate coated with a selected material which can be a mixed salt of alkali metal sulphate and carbonate (see point V above).

Claim 1 of the application as originally filed does not require the percarbonate to be coated.
However, the application as originally filed discloses that the percarbonate can be coated e.g. with a mixed salt of an alkali metal sulphate and carbonate (page 3, lines 8 to 10).

The part of the description following this passage (page 3, lines 10 to 14) teaches that this type of coating has been described in GB-1466799 and that the weight ratio of the mixed salt coating material to percarbonate lies in the range from 1:2000 to 1:4.

Since the wording of claim 1 was not restricted to salts of alkali metal sulphate and carbonate as described in said prior art document and to ratio of percarbonate to mixed salt as mentioned hereinabove, Appellant 02 submitted that claim 1 did not comply with the requirements of Article 123(2) EPC.

The Board finds, however, that this passage only exemplifies one piece of the prior art wherein this type of coating material is disclosed and does not teach to use exclusively the mixed salts disclosed therein. The weight ratio mentioned of the mixed salt to percarbonate is thus also to be considered as an example and not as a compulsory requirement for the mixed salt generally described in the preceding passage.

Claim 1 according to the main request thus complies with the requirements of Article 123(2) EPC.

1.1.2 Claim 12 relates to a method whereby a detergent composition comprising a percarbonate having a coating as specified in claim 1 is put in a reusable dispensing device together with the clothes to be washed (see point V above).

The application as originally filed contains a similarly worded claim (claim 14) whereby the percarbonate is not required to be coated; the description, however, does not relate explicitly to the embodiment of claim 14. Therefore, Appellant 03 submitted that the application as originally filed did not contain any disclosure of the method of claim 14 applied to a percarbonate having the specific coatings of claim 1 according to the main request and that

therefore claim 12 contravened the requirements of Article 123(2) EPC.

The Board notes, however, that the description of the application as originally filed teaches that the percarbonate can be coated with the coatings specified in amended claim 1 according to the main request (see page 3, lines 8 to 10 and 19 to 20).

The Board thus finds that this teaching is of general applicability to all the embodiments of the invention covered by the claims, including also the method of claim 14.

Claim 12 according to the main request complies thus with the requirements of Article 123(2) EPC.

1.2 *Novelty*

Novelty of the claimed subject-matter was not disputed by Appellants 02 and 03.

The Board has no reason to depart in this respect from the decision of the first instance that the claimed subject-matter is novel.

1.3 *Inventive step*

1.3.1 The patent in suit and, in particular, the subject-matter of claim 1, relates to a detergent composition comprising a coated percarbonate bleach, amylase and protease (page 2, line 5, 39 and 55 to 56).

As explained in the patent in suit, detergent compositions comprising a percarbonate bleach and enzymes were known in the prior art. Moreover, percarbonate bleach was known to have less impact on the environment than perborate and to be capable of providing a useful source of carbonate ions for detergency purpose (see page 2, lines 12 to 17 and 20 to 21). The action of enzymes on specific stains, e.g. of amylase on starch-based stains, and the action of percarbonate on bleachable stains was also known (page 2, lines 33 to 34).

The technical problem underlying the claimed invention was thus reported in the patent in suit as the provision of an enzymatic percarbonate based composition having an improved efficiency on the removal of difficult stains such as starch-based stains, blood stains and particulate stains, in particular at low temperature (see page 2, lines 34 to 40).

According to the jurisprudence of the Boards of Appeal of the EPO, the most suitable starting point to be selected for assessing inventive step of a claimed subject-matter is, if possible, a technically realistic starting point contained in a document dealing with the same technical problem as the claimed invention, disclosing subject-matter having a similar use and effect as the subject-matter claimed in the patent in suit and having the most relevant technical features in common (see Case Law of the Boards of Appeal of the EPO, 4th edition 2001, point 3.1 on page 102).

1.3.2 Document (1) relates to enzymatic laundry detergent compositions comprising a peroxygen bleach and showing an improved cleaning efficiency on a mixture of stains including e.g. blood stains (page 1, lines 1 to 5 and lines 12 to 15 and page 26, lines 2 to 4; examples 20 to 22; all references to document (1) being based on the numbering at the top of the pages).

Such compositions comprise a peroxygen bleach, which can be a percarbonate, coated with a water-insoluble cellulose derivative, as well as proteolytic and amylolytic enzymes (see page 1, lines 16 to 20; page 3, lines 7 to 10; page 6, lines 10 to 16; and examples 6, 12 and 16).

This document thus deals with a technical problem similar to that underlying the claimed invention and discloses compositions comprising the three essential components of the composition of claim 1 according to the main request.

Document (15) relates mainly to the improvement of the performance of perborate based compositions in the removal of proteolytic stains and peroxygen bleachable stains and teaches that it is possible to use an amylase in combination with the protease and to use percarbonate instead of perborate (column 1, lines 20 to 30; column 10, lines 1 to 4 and 15 to 18). Therefore, this document also deals with the improvement of the performance of enzymatic percarbonate bleach based compositions in the removal of stains. However, it does not disclose explicitly any composition comprising the three essential components of claim 1 according to the main request.

Therefore, the Board takes document (1), having most relevant features in common with the subject-matter of claim 1, as the most suitable starting point for evaluating inventive step.

Since the compositions of document (1) already provided an improvement of the cleaning efficiency on stains, the technical problem underlying the claimed invention can be defined in accordance with the patent in suit as the provision of alternative compositions comprising percarbonate, protease and amylase which are also able to provide such an improvement.

1.3.3 As submitted by the Appellants 02 and 03, the experimental evidence contained in the patent in suit and that submitted with the letter of 10 November 2004 at first instance do not contain any test on a composition according to claim 1.

However, the experimental evidence provided by Appellant 01 with the letter of 12 December 2005 contains tests on an enzymatic detergent composition comprising a percarbonate coated with a mixed salt of sulphate and carbonate, amylase and protease and thus having all the features of claim 1 according to the main request.

The compositions tested in this experimental evidence were a reference composition R having the formulation given in attachment 3 of the experimental evidence submitted with the letter dated 10 November 2004 and containing 9% of anionic surfactant as submitted during the oral proceedings at first instance and confirmed in writing by Appellant 01 (see letter of 12 December 2005,

point 4.17 on page 7), a composition A containing the same components as the reference composition with the addition of the coated percarbonate, amylase and protease, a composition B identical to composition A but not including the coated percarbonate and a composition C identical to composition A but not including the protease.

The performance of these compositions in the removal of various stains was tested at low temperature (20°C) and at various ratios of percarbonate to protease from 1:2.5 to 20:1, including three ratios within the range of claim 1 of 1:2 to 10:1, i.e. 1:1, 4:1 and 8:1.

Attachment 3 of the evidence submitted with the letter of 12 December 2005 reports the improvement of the performance of composition A (according to the invention) over the reference composition detracted of the improvements of compositions B (not containing percarbonate) and C (not containing protease) over the reference composition.

Positive results indicate thus the presence of a synergistic improvement of the performance on specific stains.

All tests show that the range of compositions having a ratio of percarbonate to protease and amylase as in claim 1 bring about a synergistic improvement of the removal of stains such as grass/mud, humax peat (particulate stain), coffee (peroxygen bleachable stain) and blood (proteolytic stain) at low temperature.

Appellants 02 and 03 contested the validity of these tests and submitted that they had to be disregarded (see point VI above).

However, the Board finds that the tests of the above mentioned experimental evidence could have been reworked by the other parties by using components belonging to the general classes of compounds mentioned in the formulation of reference composition R at the specified amounts and that, therefore, there was no need to know the specific components used for the composition R in those tests.

Furthermore, even though there could be some discrepancies between the values reported for another sets of tests in attachment 4 of the evidence submitted with the letter of 12 December 2005 and those reported in attachment 2 of 10 November 2004 for identical compositions, reported values have to be compared within the same set of tests and cannot be compared with tests carried out more than one year earlier on slightly different stain materials as explained in the letter of 12 December 2005 (page 8, par. 4.22).

Therefore, contrary to the opinion of Appellants 02 and 03, the Board finds that the experimental data submitted with the letter of 12 December 2005 are meaningful and show a synergistic improvement of the stain removal on a variety of stains.

The Board is thus convinced that the claimed composition solves the technical problem underlying the claimed invention mentioned hereinabove (see point 1.3.2, last paragraph).

1.3.4 Document (1) taught that the cleaning efficiency of an enzymatic detergent composition could be improved by coating the peroxygen bleach, e.g. the percarbonate, with a specific water-insoluble coating different from that of claim 1 according to the main request (see page 1, lines 12 to 15).
In fact, even though document (1) suggested to use specific ranges of activity of amylase and protease (page 6, lines 10 to 16) and disclosed examples containing percarbonate, amylase and protease (examples 6, 12 and 16), it did not contain any teaching to select any specific ratio of the percarbonate to the enzymes in order to improve the stain removal performance of the enzymatic composition.

Moreover, even though document (17) disclosed a percarbonate coated with a mixed salt of alkali metal sulphate and carbonate, i.e. with a coating in accordance with claim 1 of the patent in suit, this coating was used in that document for improving the storage stability of the percarbonate (page 1, lines 9 to 57; page 2, lines 32 to 46) and not for improving the cleaning performance.
Therefore, even though such a known coated percarbonate could have been commercially available at the priority date of the patent in suit, as submitted by the Appellants 02 and 03, it would not have been obvious for the skilled person to use it instead of the coating used in document (1) with the expectation of improving the stain removal performance of enzymatic detergent composition.

Furthermore, the remaining cited prior art did not contain any teaching that would have prompted the skilled person to use ratios of bleach to protease and amylase according to the patent in suit in order to obtain an improvement of the performance of percarbonate based enzymatic detergent compositions in the removal of difficult stains such as starch-based, blood and particulate stains.
For example, document (15) taught to add a bleach activator in order to improve the removal of proteolytic stains and did not contain any suggestion that the selection of specific ratios of percarbonate to amylase and protease could bring about any beneficial effect (see column 1, lines 19 to 30).

The prior art thus did not suggest that it would have been possible to obtain a synergistic improvement in the removal of a variety of stains by abandoning the teaching of document (1) of using a water-insoluble cellulose derivative as coating for the percarbonate and by selecting specific ratios of percarbonate and amylase and protease according to claim 1.

The Board concludes thus that the subject-matter of claim 1 involves an inventive step.

1.3.5 The remaining claims involve an inventive step for the same reasons.

2. In the light of the above findings, there is no need for the Board to consider the auxiliary requests.

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 documents:

   - claims 1 to 12 according to the main request

   - the description to be adapted.

The Registrar: The Chairman:

G. Rauh P.-P. Bracke