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Datasheet for the decision of 25 June 2007

Case Number: T 0113/06 - 3.3.06

Application Number: 98926514.5

Publication Number: 1007617

IPC: C11D 3/386

Language of the proceedings: EN

Title of invention:
Detergent compositions comprising a mannanase and percarbonate

Patentee:
THE PROCTER & GAMBLE COMPANY

Opponents:
HENKEL KGaA
Unilever N.V.
GENENCOR INTERNATIONAL INC.

Headword:
Mannanase/PROCTER & GAMBLE

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (no): synergistic effect proved on the basis of a specific isolated test not credible if called into question by a more comprehensive series of significant tests showing an opposite result"

Decisions cited:
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Catchword:
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Case Number: T 0113/06 **-** 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 25 June 2007

Appellant: (Patent Proprietor)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 22 November 2005 revoking European patent No. 1007617 pursuant to Article 102(1) EPC.**

Composition of the Board:

Chairman: G. Raths
Members: L. Li Voti
A. Pignatelli

Summary of Facts and Submissions

I. The present appeal is from the decision of the Opposition Division to revoke European patent no. 1 007 617 concerning a detergent composition comprising mannanase and percarbonate.

II. The European patent was granted with a set of 10 claims, claim 1 of which reads as follows:

"1. A detergent composition comprising a mannanase enzyme characterised in that it further comprises percarbonate."

Claims 2 to 8 relate to specific embodiments of the claimed detergent composition and claims 9 and 10 to the use of such a composition for stain removal or whiteness maintenance.

III. In their notices of opposition the Opponents 01, 02 and 03 sought revocation of the patent *inter alia* on the grounds of Article 100(a) EPC, because of lack of inventive step of the claimed subject-matter.

The following documents were referred to in the course of the opposition proceedings:

(13): WO-A-95/35362 and

(14): WO-A-95/17495.

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

- the technical problem underlying the invention was the provision of a detergent composition providing a superior cleaning performance on stains containing mannans (mannose polymers);

- document (13), representing the closest prior art, disclosed a cleaning composition comprising a mannanase and a bleaching agent and differing from the subject-matter of the patent in suit only insofar as it did not contain percarbonate;

- the experimental data submitted by the Patent Proprietor with letter of 18 June 2004 showed that a detergent composition comprising specific amounts of a specific percarbonate and of a specific mannanase provided a synergistic removal of the tested stain;

- the experimental data submitted by Opponent 01 with letter of 13 September 2005 and relating to the removal of stains obtained from porridge, which appeared to contain mannans, did not show any presence of such a synergistic effect;

- the experimental data submitted by Opponent 02 with letter dated 16 September 2005 included a repetition of those carried out by the Patent Proprietor by using the same stain of Viennetta ice cream which, however, appeared to include some chocolate also; even though the presence of chocolate in this set of tests could have affected

the measurement of the b-values (a measure for yellowness), the results showed that mannanase alone provided a significant cleaning effect whereas the combination with percarbonate did not provide any synergistic effect;

– therefore, taking into account the experimental data submitted by the Patent Proprietor and by the Opponents, it had to be concluded that not all the combinations of percarbonate and mannanase encompassed by the claims of the patent in suit brought about a synergistic effect;

– the skilled person, knowing, for example, from document (14) that percarbonate was a more environmentally acceptable bleaching agent than perborate, dissolved readily in water and provided a useful source of carbonate ions for detergency, would have considered the use of percarbonate as bleaching agent in a composition as disclosed in document (13);

– therefore, the claimed subject-matter lacked an inventive step.

V. An appeal was filed against this decision by the Patent Proprietor (Appellant).

The Appellant submitted with the grounds of appeal an amended set of claims to be considered as auxiliary request.

Oral proceedings were held before the Board on 25 June 2007 in the absence of the duly summoned Appellant and

Respondent 03 (Opponent 03), which had both informed the Board with letters of 24 April 2007 and 29 January 2007, respectively, that they will not attend the oral proceedings.

VI. The set of claims according to the **auxiliary request** comprises an independent claim 1, the wording of which differs from that according to the main request only insofar as it requires that the mannanase enzyme is a β-mannosidase (EC 3.2.1.25), endo-1,4-β-mannosidase (EC 3.2.1.78) or 1,4-β-mannobiosidase (EC 3.2.1.100) at a level of from 0.0001 % to 2% pure enzyme by weight of total composition and that the percarbonate has the formula $2Na_2CO_3 \cdot 3H_2O_2$ and is present at a level of from 1 % to 25% by weight of the total composition.

VII. The Appellant submitted in writing ***inter alia*** that

- it had been found that mannose polymers, such as guar gum, cross-linked with perborate and rendered stains comprising such polymers harder to remove by using compositions comprising such a bleaching agent;

- the combination of percarbonate with mannanase provided instead a synergistic removal of such stains as demonstrated in the experimental report of 18 June 2004, wherein the vanilla portion of a Viennetta ice cream had been used for the preparation of stains containing mannose polymers after separation of the chocolate parts;

- the experimental report submitted by Respondent 02 (Opponent 02) was not significant since the stain removal had been tested either on stains of Viennetta vanilla ice cream containing also the crushed crisp chocolate layers within the ice cream, the cocoa particles of which disturbed the measurement of the Δb-value or on other ice cream stains containing chocolate too;

- the experimental report submitted by Respondent 01 (Opponent 01) with letter of 13 September 2004 was not significant since the tested stains, including the porridge stains discussed in the decision under appeal, did not contain any mannose polymer;

- since document (13) suggested perborate as bleach, the skilled person would have had no motivation for using percarbonate instead of perborate in a composition comprising mannanase;

- furthermore, even though the skilled person could have envisaged to use percarbonate instead of perborate in the compositions disclosed in document (13) because of its better environmental acceptability, it would not have expected that its use in combination with mannanase would bring about a synergistic removal of stains comprising mannose polymers;

- therefore, the claimed subject-matter involved an inventive step.

VIII. The Respondents 01 and 02 submitted that

- it was important to note that both the Appellant and Respondent 02 had used the same kind of ice cream for preparing the stains containing mannose polymers tested in the respective experimental reports;

- even though the Appellant disputed that the different sets of experiments were comparable, the vanilla ice cream used by the Appellant for the preparation of the stains contained cocoa pigments too and the Appellant's Δb-value measurements had to be necessarily also influenced by the presence of cocoa particles; therefore, the tests submitted by Respondent 02 on stains containing cocoa pigments were significant;

- the tests submitted by Respondent 01 were also significant since porridge stains contained compounds which were degraded by mannanase;

- therefore, the claimed combination did not bring about any synergistic effect and it was obvious for the skilled person, in the light of the teaching of the prior art, to try percarbonate as suggested in document (14) in a detergent composition comprising mannanase as disclosed in document (13).

IX. The Appellant requests that the decision under appeal be set aside and that the patent be maintained as granted (main request) or, in the alternative, on the

basis of claims 1 to 8 submitted with the statement of the grounds of appeal (auxiliary request).

X. The Respondents 01 and 02 request that the appeal be dismissed.

Respondent 03 did not submit any request.

Reasons for the Decision

1. *Main request*

1.1 The invention relates to a detergent composition comprising percarbonate and a mannanase enzyme (page 2, line 5).

As explained in the patent in suit food or cosmetic stains containing mannose polymers such as guar gum, a known food thickener, had been found to be particularly difficult to remove because of the tendency of these polymers to cross-link with perborate bleach which could be present in detergent compositions (page 2, lines 14 to 21).

Therefore, the technical problem underlying the invention was formulated in the patent in suit as the provision of a detergent composition providing a superior removal of stains containing mannose polymers (page 2, lines 45 to 47 and page 3, lines 14 to 19).

1.2 Document (13) deals with the technical problem of providing detergent compositions which are able to remove stains of food compositions comprising plant

cell wall components as thickeners, e.g. hemicellulose materials including mannose polymers (page 3, line 36 to page 4, line 4; page 5, lines 17 to 21 and page 7, lines 3 to 7).

Therefore, the Board agrees with the department of first instance that this document represents the most suitable starting point for the evaluation of inventive step of the claimed subject-matter (see point IV above).

Document (13) discloses a detergent composition comprising a mannanase enzyme, which composition can comprise a bleaching agent also (see page 19, lines 26 to 33; page 20, line 16; page 23, lines 10 to 30; examples 3.81 to 3.8.4 on pages 31 to 33; page 11, lines 26 to 27).

Therefore, document (13) discloses a composition differing from that of claim 1 according to the patent in suit only insofar as it does not contain percarbonate.

1.3 The Appellant submitted that the claimed combination provided a superior removal of stains containing mannose polymers since it brought about a synergistic removal of such stains as proved by the experimental report of 18 June 2004 (see also the patent in suit, page 2, lines 45 to 47 and page 3, lines 14 to 19).

The Board is convinced that the results shown in the Appellant's experimental report of 18 June 2004 are credible and that they appear to show that the claimed combination provides a greater stain removal than expectable by considering the single effects of the

mannanase enzyme and of percarbonate under the specific circumstances of the test, as already found in the decision of the department of first instance (see point IV above).

However, these tests were carried out by using one specific amount of a specific percarbonate and one specific amount of a specific mannanase on a specific type of stain derived from the vanilla portion of a Viennetta ice cream; moreover, they were carried out on one specific type of textile at one specific washing temperature and by measuring only the yellowing of the fabric before and after wash (Δb-value).

The Appellant's tests did not contain any evidence that a similar effect would occur in the removal of stains of different colour wherein the yellowness of the fabric would be less important for the cleaning effect or at different washing conditions or with a different composition.

On the other hand, the tests submitted by Respondent 02 with letter of 16 September 2005 are more comprehensive than the Appellant's tests since they were carried out at two different washing temperatures with two different formulations, on different kinds of fabrics and stains and measured the yellowness (Δb-value) as well as the more comprehensive ΔE value relating to the total colour difference of the washed sample, thereby generating a total of 27 data sets.

The Board finds that Respondent 02, though trying also to repeat exactly the Appellant's experimental report, tested a stain of a Viennetta vanilla ice cream wherein

the chocolate parts had not been separated and that therefore the results obtained therewith are not directly comparable with those of the Appellant. However, even though the presence of chocolate could have an influence on the single b or E value because of its dark colour, the cleaning effect occurring during washing has to be observed anyway. In other words, the stain removal effect should be anyway noticeable by measuring the Δb or ΔE values, i.e. the differences of the respective b or E values after and before wash.

Moreover, it is undisputed that the stains tested in this report, i.e. those derived from the "Viennetta vanilla" ice cream containing chocolate parts as well as those derived from a "Hertog 3 chocolades" ice cream and "AH Biologisch Chocolade Roomijs", contained mannose polymers and that the experimental report shows that mannanase has a removal effect on these stains containing chocolate but that the removal of the stains by using mannanase in combination with percarbonate did not involve a synergistic effect.

Therefore, the Board finds that the experimental report of Respondent 02 is significant. Moreover, in the present case wherein the solution of a technical problem involves the provision of a composition having allegedly a synergistic effect, an isolated specific test as carried out by the Appellant cannot be considered to be sufficient evidence for the existence of such a synergistic effect since it is called into question by a more comprehensive series of significant tests showing an opposite result.

The Board concludes that the claimed combination does not solve the technical problem underlying the invention mentioned above of providing a detergent composition showing a superior removal of stains containing mannose polymers.

Therefore, the technical problem underlying the invention has to be formulated in the light of the teaching of document (13) as the provision of an alternative composition capable of removing stains containing mannose polymers.

1.4 The Board notes that document (13) suggested already that bleaching agents could be used in a detergent composition in combination with the enzymes described therein and therefore with mannanase also (see page 11, lines 26 to 30).

Moreover, even though example 2 of this document (page 16) relates to a composition containing perborate bleach, this example relates to the use of other enzymes different from mannanase (page 18, lines 10 to 15) and not specifically to the removal of stains containing mannose polymers.

Therefore, the Board finds this example as being only an illustrative disclosure of the invention of document (13) but not limiting in any way its teaching.

Therefore, document (13) does not contain any teaching which would motivate the skilled person to use only perborate in the compositions disclosed therein.

On the contrary, since it was known at the priority date of the patent in suit that percarbonate was a more environmentally acceptable bleaching agent than perborate, dissolved readily in water and provided a useful source of carbonate ions for detergency and could be used in combination with enzymes instead of perborate (see e.g. document (14), page 1), the Board finds that it was obvious for the skilled person to try percarbonate as a bleaching agent in a composition according to document (13).

Therefore, the subject-matter of clam 1 according to the main request lacks an inventive step.

1.5 Since the main request fails on these grounds there is no need to discuss the experimental report submitted by Respondent 01 with letter of 13 September 2004.

2. Auxiliary request

2.1 The set of claims according to the **auxiliary request** comprises an independent claim 1, the wording of which differs from that according to the main request only insofar as it requires that the mannanase enzyme is a β-mannosidase (EC 3.2.1.25), endo-1,4-β-mannosidase (EC 3.2.1.78) or 1,4-β-mannobiosidase (EC 3.2.1.100) at a level of from 0.0001 % to 2% pure enzyme by weight of total composition and that the percarbonate has the formula $2Na_2CO_3 \cdot 3H_2O_2$ and is present at a level of from 1% to 25% by weight of the total composition.

Since both the tests submitted by the Appellant and those submitted by Respondent 02 contained a mannanase enzyme and a percarbonate of the type required in said

claim 1 and at the level required by this claim, the same arguments submitted in point 1.3 above apply *mutatis mutandis* to claim 1 of the auxiliary request.

2.2 Moreover, since the selected enzyme and bleach were well known commercially available products and the selection of the amounts indicated in claim 1 of the first auxiliary request does not bring about any further technical advantage, the claimed subject-matter lacks an inventive step for the reasons submitted in point 1.4 above.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

G. Rauh G. Raths