

Internal distribution code:

- (A) [] Publication in OJ
(B) [] To Chairmen and Members
(C) [X] To Chairmen
(D) [] No distribution

DECISION
of 24 March 2004

Case Number: T 1269/01 - 3.3.6

Application Number: 91200871.1

Publication Number: 0451924

IPC: C11D 3/386

Language of the proceedings: EN

Title of invention:

Enzyme stabilizing composition and the use thereof in
stabilized enzyme containing built detergent compositions

Patentee:

Colgate-Palmolive Company (a Delaware corporation)

Opponent:

Unilever N.V.

Headword:

Enzyme stablization/COLGATE

Relevant legal provisions:

EPC Art. 100(b), 54, 56

Keyword:

"New ground for opposition: not admissible without the consent
of the patent proprietor"

"Novelty (main request) - no: technical effect of use claim
underlying that known in the prior art"

"Inventive step (auxiliary request) - no: separate addition of
components to a detergent composition - obvious to try"

Decisions cited:

G 0010/91, G 0002/88, G 0006/88, T 0254/93, T 0892/94

Catchword:

-



Case Number: T 1269/01 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 24 March 2004

Appellant: Unilever N.V.
(Opponent) Weena 455
NL-3013 AL Rotterdam (NL)

Representative: Kan, Jacob Hendrik, Dr.
Unilever N.V.
Patent Division
P.O. Box 137
NL-3130 AC Vlaardingen (NL)

Respondent: Colgate-Palmolive Company
(Proprietor of the patent) (a Delaware corporation)
300 Park Avenue
New York
N.Y. 10022 (US)

Representative: Smulders, Theodorus A.H.J., Ir.
Vereenidge
Postbus 87930
NL-2508 DH Den Haag (NL)

Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 16 November 2001
rejecting the opposition filed against European
patent No. 0451924 pursuant to Article 102(2)
EPC.

Composition of the Board:

Chairman: P. Krasa
Members: L. Li Voti
U. J. Tronser

Summary of Facts and Submissions

I. The present appeal is from the decision of the Opposition Division to reject the opposition against the European patent No. 0 451 924, concerning an enzyme stabilizing composition and the use thereof.

The granted independent claims 1, 7 and 10 read, respectively, as follows:

"1. A stabilized enzyme preparation useful as a laundry additive which consists essentially of at least one enzyme selected from the group consisting of proteases, amylases and mixtures thereof, and an enzyme stabilizing effective amount of an enzyme stabilization system, characterized in that said system consists essentially of (i) from 0.25 to 10 parts by weight of a boron compound selected from the group consisting of boric acid, boron oxide, and alkali metal borates; (ii) from 1 to 3 parts by weight of an hydroxypolycarboxylic acid selected from the group consisting of aliphatic di- and tri-carboxylic acids with from 1 to 4 hydroxyl groups and with from 4 to 8 carbon atoms; and (iii) a water soluble calcium salt in an amount to provide from 18 to 50 millimoles of calcium ion per liter.";

"7. A composition for addition to a protease or amylase enzyme containing aqueous laundry detergent composition to stabilize the enzyme against degradation, said composition consisting essentially of (i) from 0.25 to 10 parts by weight of boric acid, boron oxide or alkali metal borate; (ii) from 1 to 3 parts by weight of citric acid, and a water soluble calcium salt in an amount to provide from 18 to 50 millimoles of calcium

ion per liter when added to an aqueous laundry detergent composition containing up to 5% by weight of said enzyme.";

"10. Use of a composition consisting essentially of (i) from 0.25 to 10 parts by weight of a boron compound selected from the group consisting of boric acid, boron oxide, and alkali metal borates; (ii) from 1 to 3 parts by weight of an hydroxypolycarboxylic acid selected from the group consisting of aliphatic di- and tri-carboxylic acids with from 1 to 4 hydroxyl groups and with from 4 to 8 carbon atoms; and (iii) a water soluble calcium salt in an amount to provide from 18 to 50 millimoles of calcium ion per liter as an improved enzyme stabilization system in an enzyme-containing liquid detergent composition comprising
(A) from 5 to 75%, by weight, of one or more surface active detergent compounds;
(B) from 5 to 30%, by weight, of one or more water-soluble detergency builders;
(C) from 0.01 to 5%, by weight, of at least one enzyme selected from the group consisting of proteases, amylases and mixtures thereof;
(D) water."

Dependent claims 2 to 6, 8 to 9 and 11 to 20 relate to particular embodiments of the claimed products or of the claimed use.

II. In its notice of opposition the Opponent sought revocation of the patent on the grounds of Article 100(a) EPC, in particular for lack of novelty and inventive step of the claimed subject-matter.

The following documents were *inter alia* cited in support of the opposition:

(1): US-A-4900475

(4): EP-A-0199405

III. In its decision the Opposition Division found that the claimed subject-matter complied with the requirements of the EPC.

In particular it found that

- the novelty of the subject-matter of claims 1 to 9 had not been contested by the Opponent;
- document (4) did not disclose a detergent composition having all the features of that of the use claim 10;
- the technical effect of the use claim 10 was not disclosed in the prior art;
- the subject-matter of claims 10 to 20 was thus novel over the cited prior art.

As regards inventive step the Opposition Division found that

- the examples of the patent in suit proved convincingly that the selected ternary combination of hydroxypolycarboxylic acid, boron compound and calcium ions provided a synergistic effect in terms of enzyme stabilization;

- the cited prior art did not suggest that such a combination could act synergistically in the stabilization of enzymes;
- the claimed subject-matter involved therefore an inventive step.

IV. An appeal was filed against this decision by the Opponent (Appellant).

Oral proceedings were held before the Board on 24 March 2004.

The Appellant submitted in writing and orally *inter alia* that:

- the claimed invention contravened the requirements of Article 83 EPC;
- the amounts of hydroxypolycarboxylic acid and boron compound used in claim 10 were given in parts by weight and did not relate to the total of the final detergent composition, whilst the amount of calcium ions was related to the total of the composition; therefore the wording of claim 10 did not require any precise amount of hydroxypolycarboxylic acid and boron compound in the final composition but only a specific weight ratio of these two components;
- document (4) disclosed a liquid detergent composition having all the features of the final detergent composition of the use claim 10 and

taught that the enzyme contained in the composition had improved stability; for example, the example on page 11 of document (4) showed that a composition according to the teaching of this document, which comprised boric acid was much more stable upon storage than a similar composition without boric acid;

- the enzyme stabilization under freeze-thaw conditions addressed in the patent in suit (page 3, lines 54 to 56) regarded a method for a quick prediction of the stability of the enzyme over long term storage and could not be considered as a technical effect different from that shown in document (4);
- therefore, the wording "improved enzyme stabilization" of claim 10 could not distinguish the claimed technical effect from that of the prior art;
- the subject-matter of claim 10 lacked thus novelty in the light of document (4).

As regards inventive step the Appellant submitted *inter alia* that

- document (4) disclosed stabilized enzymatic liquid detergent compositions comprising a boron compound, a hydroxypolycarboxylic acid and calcium ions;
- starting from the examples of document (4), it was obvious for a skilled person to use a greater amount of calcium ions within the range suggested

in this document for increasing the stabilizing effect or to add the stabilizing components as a premix to be added to the rest of the detergent composition;

- the examples of the patent in suit did not regard the use of an additive product as claimed in claims 1 to 9; therefore, the results of the tests of the patent in suit had to be disregarded in the evaluation of inventive step of these claims;
- moreover, no improvements had been shown for the use of low amounts of borate or citrate which were also encompassed by the claims;
- no support had been thus provided for the alleged surprising technical effect;
- the claimed subject-matter thus lacked an inventive step in the light of the teaching of document (4).

V. The Respondent and Patent Proprietor submitted in writing and orally inter alia that:

- the Appellant had not raised any objection as to Article 83 EPC during the opposition proceedings; the arguments put forward under Article 83 EPC in the statement of the grounds of appeal amounted thus to a new ground of opposition and had to be disregarded;

- even though the amounts of hydroxypolycarboxylic acid and boron compound in claim 10 had been given in parts by weight, these amounts had to be interpreted as being percentages by weight calculated on the total of the final composition as suggested in the description of the patent in suit (see page 5, lines 36 to 37 and 47 to 48);
- document (4) did not disclose the combination of all the features of the detergent composition of claim 10;
- the wording "improved enzyme stabilization" in claim 10 had to be understood as indicating a synergistic improvement achieved by the combination of all three essential components of the stabilization system over a combination comprising only two of these components;
- moreover the enzyme of the compositions used according to the patented invention was stable also under more severe conditions (freeze-thaw conditions) than the products of the prior art;
- therefore the "improved enzyme stabilization" of claim 10 was a new functional technical feature not disclosed in document (4);
- the claimed subject-matter was thus novel over document (4).

As regards inventive step the Respondent submitted that

- the tests contained in the patent in suit showed an improved stabilization of the enzyme not achieved in the prior art and were valid also for the claims regarding an additive product;
- the hydroxypolycarboxylic acids were used in document (4) only as builders and not as enzyme stabilizers (column 11, lines 12 to 14); moreover, even though such compounds had been used in a stabilizing composition in document (1), the detergent composition of that document had not to comprise calcium ions (column 3, lines 58 to column 4, line 6 and column 6, lines 56 to 62);
- therefore, the prior art did not suggest the use of a combination of the three components of the patent in suit for stabilizing enzymes;
- the claimed subject-matter thus involved an inventive step.

VI. The Appellant requests that the decision of first instance be set aside and that the patent be revoked.

The Respondent requests that the appeal be dismissed or, auxiliary, that the patent be maintained in amended form on the basis of claims 1 to 9 as granted.

Reasons for the Decision

1. *Articles 83 and 100(b) EPC*

The Appellant argued for the first time in the statement of the grounds of appeal that the patent in suit contravened the requirements of Article 83 EPC.

The Respondent (Patent Proprietor) requested this new ground of opposition to be disregarded (see point V above).

It is established jurisprudence of the Boards of Appeal of the EPO that new grounds of opposition can be raised in appeal proceedings only with the consent of the Patent Proprietor (see G 10/91, OJ EPO 1993, 420, point 3 of the headnote).

This consent having not been given by the Respondent, the newly introduced ground for opposition under Article 100(b) EPC has to be disregarded.

2. *Main request*

2.1 Novelty

- 2.1.1 Claim 10 of the main request relates to the use of a composition consisting essentially of (i) from 0.25 to 10 parts by weight of a specific boron compound; (ii) from 1 to 3 parts by weight of a specific hydroxypolycarboxylic acid; and (iii) a water soluble calcium salt in an amount to provide from 18 to 50 millimoles of calcium ion per liter as an improved

enzyme stabilization system in a specific enzyme-containing liquid detergent composition comprising surface active detergent compounds, water-soluble detergency builders, enzymes selected from the group consisting of proteases and amylases and water.

The amounts of boron compound and hydroxypolycarboxylic acid are given in the wording of this claim as parts by weight.

Even though the description of the patent in suit relates in different parts the amounts of these two components both as parts by weight or percentages of the total composition (see page 4, lines 5 to 7 and 23 to 24 and page 5, lines 36 and 47), the Board cannot agree that the wording of claim 10 has to be interpreted as relating to percentages by weight of these components. In fact, the wording "parts by weight", which is supported by the description of the patent in suit, is broader than and encompasses the case where the mentioned numerical values regard percentages by weight of the total composition. The Board concludes therefore that the wording of claim 10 does not require the presence of a precise amount of boron compound and hydroxypolycarboxylic acid but requires only that these two compounds be present at a specific weight ratio to each other.

Taking the extremes of the respective ranges of "parts by weight" for these two compounds, claim 10 requires thus that the boron compound and the hydroxypolycarboxylic acid are present at a weight ratio of 0.25:3 to 10:1, i.e. 1:12 to 10:1.

As regards the calcium ion amount of claim 10 it is instead clear in the light of the description that the indicated millimoles of calcium ion are related to one liter of the final composition (see page 5, lines 49 to 50 and 52).

2.1.2 Document (4) discloses an aqueous liquid detergent composition comprising an enzyme and a stabilization system therefor. Such compositions comprise 1 to 75%, preferably, 5 to 50% by weight of detergent surfactants, 0.01 to 5%, preferably, 0.1 to 2% of a proteolytic enzyme, preferably 5 to 40% of detergent builders, preferably water-soluble polycarboxylate builders and in particular 1 to 20% of citrates, 0.1 to 10%, preferably 0.25 to 5%, boric acid and 0.01 to 50, preferably 0.1 to 30, millimoles of calcium ion per liter of composition.

Therefore, the disclosed amounts of detergent surfactants, proteolytic enzyme, water-soluble detergent builders and calcium ion are identical or largely overlap with the ranges of claim 10.

Moreover, it can be derived from the ranges given above that boric acid and citrates are present in the compositions of document (4) at a weight ratio to each other of 0.1:20, i.e. 1:200 to 10:1 and, preferably, 0.25:20, i.e. 1:80 to 5:1. This range of weight ratios also overlaps with that required by claim 10 of the patent in suit.

The Board thus concludes that document (4) gives a clear technical teaching of operating in this range of overlap.

Document (4) thus describes a composition comprising all the features of that of claim 10 of the patent in suit.

- 2.1.3 The only question remaining to be replied is thus if the technical effect of "improved enzyme stabilization" of claim 10 amounts to a new technical feature.

As explained by the Appellant during oral proceedings the wording "improved enzyme stabilization" in claim 10 has to be understood as indicating that a greater stabilization of the enzyme is achieved by the combination of all the three essential components of the stabilization system over a combination comprising only two of these components.

The Board agrees with this interpretation.

According to the established jurisprudence of the Boards of Appeal of the EPO, in a second or further non-medical use of a known product for achieving a technical effect, the attainment of such a technical effect has to be considered a functional technical feature of the claim. The claim is thus to be regarded as being novel if this functional technical feature has not been previously made available to the public by any of the means set out in Article 54(2) EPC, e.g. by a prior art document disclosing directly and unambiguously the subject-matter in question when also taking account of everything which would be considered by a skilled person as part of the common general knowledge in connection with the disclosed subject-matter at the publication date of the cited document, even though the technical effect might have inherently

taken place in the course of carrying out what had previously been made available to the public (G 0002/88, OJ EPO 1990, 093, point 10.3 of the reasons for the decision and G 6/88, OJ EPO 1990, 114, point 9 of the reasons for the decision).

However, if this technical feature, though being undisclosed in the prior art, just contributes to or explains the known effect obtained by the known use of the prior art, the claim cannot be regarded as novel (see T 254/93, OJ EPO 1998, 285, point 4.8 of the reasons for the decision and T 892/94, OJ EPO 2000, 001, points 3.4 and 3.5 of the reasons for the decision).

- 2.1.4 Document (4) teaches that the enzyme contained in the composition disclosed therein has an improved stability upon storage (column 1, lines 3 to 10; column 6, lines 39 to 56; column 13, lines 49 to 56; column 23, lines 51 to 56). Even though this document does not teach that citric acid contributes to the stabilization effect due to the presence of boric acid and calcium ions, it discloses compositions comprising citric acid as explained above (point 2.1.2). Moreover, the tests contained on page 11 of this document show that, e.g., the enzyme of composition B comprising boric acid (and also comprising citric acid and calcium ions) is more stable upon storage than a composition without boric, i.e. with only citric acid and calcium ion. Therefore, document (4) shows an improved stabilization of the enzyme over compositions comprising only two of citric acid, boric acid and calcium ions, as required by claim 10 of the patent in suit.

The fact the citric acid has been found in the patent in suit to contribute also to this effect cannot amount therefore to a new technical feature within the meaning of G 2/88 and 6/88 since the alleged new technical effect underlies that already disclosed in document (4), i.e. that of improved stability of the enzyme upon storage.

The Board notes also that even though the effect obtained in the patent in suit appears to be governed by the above mentioned three components of the so-called stabilizing system, the stability of the enzyme is also influenced by other components of the detergent composition in which it is used, e.g. by ph modifiers as suggested in the patent in suit (see page 10, lines 11 to 14) and accepted by the Respondent during oral proceedings. Therefore, the effect achieved by the above mentioned ternary combination cannot be distinguished in the present case from the effect brought about by the composition as a whole (see also the decisions T 254/93 and T 892/94 mentioned above).

- 2.1.5 The Respondent argued also that the "improved enzyme stabilization" of claim 10 should be regarded as a new technical effect since the enzyme is rendered stable to freeze-thaw conditions, i.e. to more severe conditions than those of the prior art.

The Board notes, however, that the use of freeze-thaw conditions is not part of claim 10 and is just a way of measuring the storage stability of a composition or of a component thereof, in the present case of the enzyme, and cannot identify a qualitatively or quantitatively different technical effect. What is measured upon

storage under freeze-thaw conditions or under constant temperature as, e.g., in document (4), is in fact the same enzyme stability upon storage, i.e. the same technical effect. Claim 10 does not contain in this respect any quantitative limitation as to the technical effect to be achieved apart from the requirement that the achieved stabilization should be greater than that achieved by using only two of the components of the stabilization system which improvement, however, had been already achieved in document (4) (see point 2.1.4).

In view of the foregoing there is thus no need to discuss the tests contained in the patent in suit.

- 2.1.6 The first instance has indicated on page 13 of its decision as obiter dictum that there would appear to be a contradiction in the jurisprudence of the Boards of Appeal between the fact that a claim relating generally to the use of a product for a new purpose not described in the prior art could be considered to be novel, e.g. according to G 2/88 and G 6/88, whilst the same use in, for example, a composition comprising components bringing about the same effect could be regarded as being not novel as, e.g. decided in T 892/94. The Board cannot recognize on the contrary any contradiction. In fact the first case relates to a technical effect which should exist and be reproducible using the mentioned product by itself without the assistance of other components, whilst the second case (similar to the present case) relates to the use of a known mixture comprising the mentioned product wherein such a product contributes to the known effect already achieved by said mixture without resulting in a new technical effect.

- 2.1.7 The Board concludes that the subject-matter of claim 10 of the main request lacks novelty.

The main request is thus to be dismissed.

3. *Auxiliary request*

3.1 Novelty

The set of claims according to this request does not comprise the use claims of the main request.

The novelty of the subject-matter of these claims has not been contested by the Appellant.

No further details are thus necessary.

3.2 Inventive step

- 3.2.1 The patent in suit and, in particular, the subject-matter of claim 7, relates to a composition consisting essentially of specific amounts of a boron compound such as boric acid, citric acid and a water-soluble calcium salt (page 4, lines 15 to 20).

As explained in the patent in suit, the enzyme contained in built liquid detergent composition is especially subject to degradation upon storage (page 2, lines 16 to 27). The prior art, *inter alia* document (4), had already provided means for stabilizing the enzyme (see page 2, lines 28 to 31 and page 3, lines 47 to 51 of the patent in suit).

The technical problem underlying the patent in suit is therefore defined in the description of the patent in suit as the provision of a ternary combination able to provide a synergistic improvement of the enzyme stability when added to an enzymatic liquid detergent composition. The therewith achieved enzyme stability should thus be greater than that achieved by using only two of these components (see page 3, lines 54 to 56 and page 5, lines 21 to 23).

Document (4), referred to in the description of the patent in suit as having already provided means for stabilizing enzymes in a built liquid detergent composition and providing enzymatic liquid detergent compositions identical to those used in the patent in suit comprising boric acid, citric acid and calcium ions (see point 2.1.3 above), is considered by the Board in agreement with both parties as the most suitable starting point for the evaluation of inventive step.

Since, as explained above, the stabilizing effect of the invention of the patent in suit had already been achieved in document (4) (see point 2.1.5 above) and the use of the stabilizing components as a separate additive does not bring about any different enzyme stabilization than that achieved by mixing them with all other components during the preparation of the detergent composition, as admitted by the Respondent during oral proceedings and suggested in the patent in suit (page 5, lines 14 to 18), the objective technical problem underlying the invention of the patent in suit is thus to be formulated in more simpler terms as the provision of a different form of addition of the

stabilizing system to the enzymatic liquid detergent composition.

- 3.2.2 The Board notes that the preparation of a detergent composition by adding certain components as separate additives to a base formulation is a known process step in this technical field and it would have been obvious for the notional skilled person to try this step to the compositions of document (4) in order to adjust the functionality of the final composition to the desired results.

Therefore, it was obvious for the skilled practitioner to prepare the compositions of document (4) by adding parts of their components, e.g. citric acid, boric acid and water-soluble calcium salts as a separate additive.

Furthermore, even though document (1) apparently suggests the use of citric acid in a different stabilizing system in the absence of calcium ions (see point V above) it does not represent common general knowledge (see Case Law of the Boards of Appeal of the EPO, 4th edition, 2001, page 145, point 2(a)) and thus it cannot be considered as a pointer to the notional skilled person that would lead him away from preparing a ternary additive composition comprising boric acid, citric acid and water-soluble calcium salts.

Therefore, the Board concludes that the subject-matter of claim 7 of the auxiliary request does not involve an inventive step.

The auxiliary request has thus to be dismissed.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

G. Rauh

P. Krasa