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# D E C I S I O N
## of 19 October 2005

**Case Number:** T 0848/04 - 3.3.06

**Application Number:** 95934562.0

**Publication Number:** 0785981

**IPC:** C11D 3/386

**Language of the proceedings:** EN

**Title of invention:**
Laundry Detergent Compositions containing Lipolytic Enzyme and Amines

**Patentee:**
The Procter & Gamble Company

**Opponent:**
Unilever N.V.

**Headword:**
Lipase/PROCTER & GAMBLE

**Relevant legal provisions:**
EPC Art. 56

**Keyword:**
"Inventive step (no): synergistic effect not credibly shown over the whole ambit of claim 1"

**Decisions cited:**
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**Catchword:**
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Beschwerdekammern | Boards of Appeal | Chambres de recours

**Case Number:** T 0848/04 - 3.3.06

# D E C I S I O N
**of the Technical Board of Appeal 3.3.06**
**of 19 October 2005**

| | |
|---|---|
| **Appellant:** (Opponent) | Unilever N.V.<br>Weena 455<br>NL-3013 AL Rotterdam (NL) |
| **Representative:** | Kan, Jacob Hendrik<br>Unilever N.V.<br>Unilever Intellectual Property Group<br>Olivier van Noortlaan 120<br>NL-3133 AT Vlaardingen (NL) |
| **Respondent:** (Proprietor of the patent) | THE PROCTER & GAMBLE COMPANY<br>One Procter & Gamble Plaza<br>Cincinnati, Ohio 45202 (US) |
| **Representative:** | Morelle, Evelyne Charlotte Isabelle<br>N.V. Procter & Gamble Services Company S.A.<br>Temselaan 100<br>BE-1853 Strombeek-Bever (BE) |
| **Decision under appeal:** | **Decision of the Opposition Division of the European Patent Office posted 25 May 2004 rejecting the opposition filed against European patent No. 0785981 pursuant to Article 102(2) EPC.** |

**Composition of the Board:**

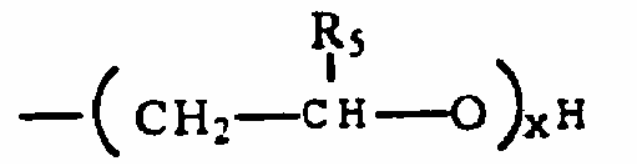
**Chairman:** L. Li Voti
**Members:** G. Raths
J. Van Moer

## Summary of Facts and Submissions

I. This appeal lies from the decision of the Opposition Division to reject the opposition filed against the European patent No. 0 785 981 (filing date: 29 September 1995; priority dates: 13 October 1994 WOPCT/US94/11779; 20 June 1995 WOPCT/US95/07824), which contained 9 claims, Claim 1 reading:

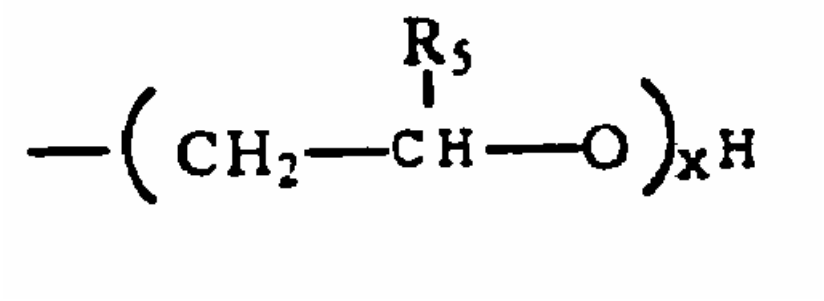
"1. A laundry detergent composition comprising an anionic surfactant and a lipolytic enzyme, characterized in that said detergent composition further comprises an amine selected from
a) primary amines according to the formula $R_1NH_2$ wherein $R_1$ is a $C_6$-$C_{12}$, preferably $C_6$-$C_{10}$ alkyl chain or $R_4X(CH_2)_n$, X is -O-, -C(O)NH- or -NH-, $R_4$ is a $C_6$-$C_{12}$ alkyl chain, n is between 1 to 5.
b) tertiary amines having the formula

i) $R_1R_2R_3N$ wherein $R_1$ and $R_2$ are $C_1$-$C_8$ alkylchains or



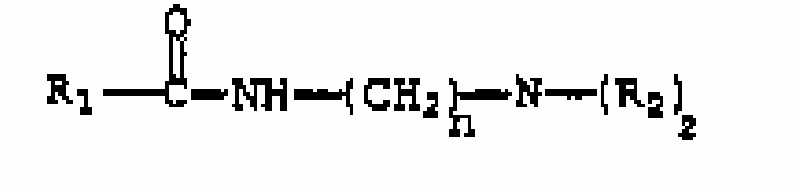
$R_3$ is either a $C_6$-$C_{12}$ or $R_3$ is $R_4X(CH_2)_n$, whereby X is -O-, -C(O)NH- or -NH-,
$R_4$ is a $C_4$-$C_{12}$, n is between 2 to 3, $R_5$ is H or $C_1$-$C_2$ alkyl and x is between 1 to 6.

ii) $R_1R_2R_3N$ where $R_1$ is a $C_6$-$C_{12}$ alkyl chain, $R_2$ and $R_3$ are $C_1$-$C_3$ alkyl or



where $R_5$ is H or $CH_3$ and x = 1-2.

iii)



wherein $R_1$ is $C_6$-$C_{12}$ alkyl; n is 2-4, preferably n is 3; $R_2$ and $R_3$ is $C_1$-$C_4$

c) mixtures of said primary and tertiary amines."

II. The notice of opposition was based on the grounds of Article 100(a) EPC for lack of novelty and inventive step (Articles 52(1), 54(2) and 56 EPC), Article 100(b) EPC for lack of disclosure of the invention according to Article 83 EPC and Article 100(c) EPC for added subject-matter.

III. During the opposition proceedings the following documents were cited:

(1) PCT/US94/11779
(2) PCT/US95/07824
(3) WO-A-96/12000
(4) WO-A-97/00929
(5) WO-A-86/07603

IV. In its decision the Opposition Division held that

– the requirements of Article 83 were fulfilled:

In particular, the invention would concern a synergistic effect between the amine and the enzyme. The amine would not have to interact with the anionic surfactant to achieve said effect; the comparative examples filed during the examination stage would show a synergistic effect between the lipase and the specific amine, although there might be an additional effect between the anionic surfactant and the amine.

The patent specification contained several examples which would show how to achieve the desired results. There would be no indication that the synergy between the lipase and the amine was pH dependent, the pH dependency having been alleged by the opponent.

– the wording "n is between 2 and 3" in Claim 1 for the formula under (i) concerning the tertiary amines would include the values "2" and "3" and would not violate Article 123(2) EPC;

– the subject-matter of Claim 1 would be entitled to the priority claimed and the subject-matter of Claim 1 would be novel over documents (3) and (4);

– as regards inventive step, the goal of the patent in suit would have been to provide laundry detergents having enhanced cleaning of grease/oil soils and stains on fabrics; document (5) relating

to the problem of improving grease and oily soil removal could be taken as the starting point for evaluating inventive step; document (5) would not teach the use of a specific enzyme-amine combination; the invention would have proved that the combination of specific amines with lipolytic enzymes would lead to an unexpected synergistic cleaning effect.

V. An appeal was filed against this decision by the opponent (hereinafter the appellant).

The appellant argued in writing and orally that

- as regards Article 123 EPC, the expression "n is between 2 and 3" would explicitly exclude the values 2 and 3, but there would be no basis in the description for excluding the values 2 and 3 in the formula regarding the tertiary amines; therefore there would be a violation of Article 123(2) EPC;

- as regards Article 83 EPC, $R_3$ would be missing in the formula b (iii); the formula being not known, it would not be possible to carry out the invention; no information was given on how to select the primary and tertiary amines; the ratios and amounts were missing; the pH would be an important feature of the detergent composition, but the claims would not contain any limitation in respect of the pH;

- neither the priority based on document (1) nor the priority based on document (2) could be

acknowledged since the subject-matter of claim 1 would be an invention different from that disclosed by said two documents;

– due to the fact that the priority was not validly claimed, documents (3) and (4) would be novelty destroying with respect to the subject-matter of Claim 1 under Article 54(3) EPC;

– as regards Article 56 EPC, document (5), relating to improved wash performance, would teach to use an anionic surfactant, a tertiary amine and optionally a lipase enzyme; the addition of a lipase would be of particular interest if the removal of soils resulting from triglyceride fats was concerned; the claims would encompass many embodiments which would not lead to a synergistic effect since e.g. there would be no pH restrictions; the comparative examples provided by the respondent (patent proprietor) in annex to its letter dated 15 May 2000 would illustrate the effect obtained by one single tertiary amine, and could therefore not be extrapolated to other types of amines in the claim; moreover a simulation of these experimental data, filed under cover of the letter dated 19 September 2005, showed that the respondent's results were statiscally not significant and no synergy had been proved between lipolase and the amine.

VI. The respondent did not argue in substance against the arguments of the appellant nor did it formally refute them. In its letter dated 18 April 2005 it informed the

Board that it will not attend oral proceedings scheduled for 19 October 2005.

VII. Oral proceedings took place on 19 October 2005 the respondent not being represented as announced in its letter dated 18 April 2005.

VIII. The appellant requests that the decision under appeal be set aside and the patent be revoked.

The respondent requests that the appeal be dismissed and that the patent be maintained as granted.

## Reasons for the Decision

1. *Articles 54, 83, 89 and 123(2) EPC*

The Board is satisfied that the requirements of Articles 83 and 123(2) EPC are met and, further, that the priorities of both documents were validly claimed (Article 89 EPC), so that also the requirements of Article 54 EPC are met. Since the patent is revoked for other reasons, there is no need to give further details.

2. *Article 56 EPC*

2.1 The invention according to the patent in suit related to laundry detergent compositions containing a lipolytic enzyme and specially selected primary and/or tertiary amines. The compositions provided enhanced cleaning of grease/oil soils and stains, particularly when used in a pre-treat laundering process for

cleaning fabrics stained with grease/oil soils (page 2, lines 5 to 7).

2.2 According to the patent in suit the ability of lipase to clean soils and stains from fabrics present in the typical load of laundry was of high importance in the evaluation of detergent performance. Unfortunately, the relative ability of lipase to meet various performance criteria was among other depending on the presence of co-surfactants. There was a standing desire for performance and flexibility reasons to make available a surfactant system capable of providing optimum detergency performance of the lipase (page, 2, lines 29 to 31, [0006] and lines 32 to 33, [0007]).

2.3 Among other, it was the goal of document (5) to find a detergent providing a high washing performance, in particular an enhanced cleaning of grease/oil soils and stains (page 5, lines 21 to 25).

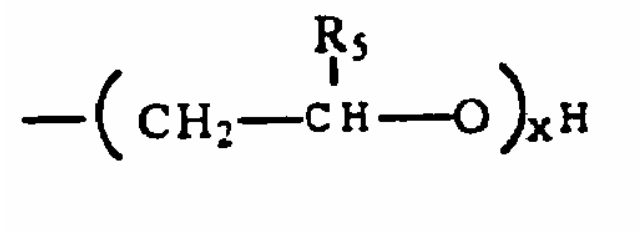
2.4 Since document (5) as well as the patent in suit dealt with enhanced cleaning of grease/oil soils and stains, the Board takes document (5) as the starting point for evaluating inventive step.

2.5 The detergent composition according to document (5) comprised among other
(a) etheramines having the formula (I)

$$R^1 - (OCH_2CH_2)_x - NR^2R^3 \qquad (I)$$

wherein $R^1$ may be $C_6$ to $C_{22}$ alkyl, x= 1 to 10, $R^2$ and $R^3$ may be $H(OCH_2CH_2)_y$ with y = 1 to 6 (see claim 2 of

document (5)) so that there was an overlap with the formula $R_1R_2R_3N$ according to the patent in suit wherein $R_1$ and $R_2$ may be

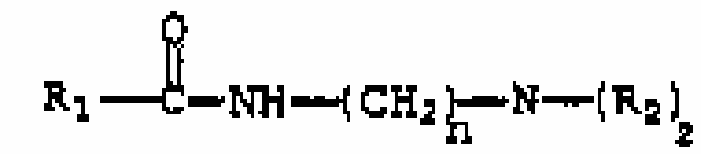


wherein $R_5$ may be H, x = 1 to 6, the difference lying in the substitution of $R_3$, which according to the patent in suit may be $R_4X(CH_2)_n$, with $R_4$ = $C_4$-$C_{12}$, X = O, n= 2 or 3, the corresponding substituent $R^1$ in formula I of document (5) being $C_6$-$C_{22}$;

(b) amidoamines having the formula (II)

$$R^4 - CO - NR^5 - (CH_2)_n - R^6R^7 \qquad (II)$$

wherein $R^4$ may be $C_9$ to $C_{17}$ alkyl, $R^5$ may be H, n may be 2 to 4, and $R^6$ and $R^7$ may be $CH_3$ (see claim 2 of document (5)) so that there was an overlap with the formula according to the patent in suit



wherein $R_1$ may be $C_6$ to $C_{12}$, $R_2$ may be $C_1$ to $C_4$ alkyl and n may be 2 to 4 according to the patent in suit.

According to document (5) the detergent compositions could comprise further components such as enzymes, to

be selected from protease, lipase and amylase (page 25, lines 22 to 23).

Therefore, the skilled person following the teaching of document (5) could manufacture detergent compositions comprising amines and lipase if he intended to obtain an enhanced cleaning of grease/oil soils and stains.

2.6 In its letter dated 15 May 2000, the respondent had shown that a detergent comprising Lipolase and the tertiary $C_{10}$ amidopropyldimethyl amine gave a grease removal rating of 2.07 Panel score units (PSU) on cotton knit fabrics stained with Hamburger grease whereas the amine only gave a rating of 0.69 PSU and Lipolase alone a rating of 0.65 PSU. The value of 2.07 PSU (obtained with Lipolase and amine) being higher than 1.34 i.e. the sum of 0.69 +0.65 obtained once with amine (0.69) and once with Lipolase (0.65), the respondent argued that this synergistic effect was due to the combination of Lipolase and the specific amine.

The test report showed also that a detergent comprising Lipolase and the tertiary $C_{10}$ amidopropyldimethyl amine gave a grease removal of 1.41 PSU on cotton knit fabrics stained with Bacon grease whereas the amine only gave a rating of 0.72 PSU and Lipolase alone a rating of 0.40 PSU. The value of 1.41 PSU (obtained with Lipolase and amine) being higher than 1.12 i.e. the sum of 0.72+0.40 obtained once with amine (0.72) and once with Lipolase (0.40), the respondent argued that this synergistic effect was due to the combination of Lipolase and the specific amine.

The amounts of amine and lipase used in the comparative examples according to the test report of the respondent was 1.10 % respectively 0.18 % (by weight).

2.7 The question is whether this technical effect was obtained over the whole scope of Claim 1 of the patent in suit.

2.8 Claim 1 however does not require particular amounts for the lipase or for the amine, or a particular ratio of enzyme to lipase as used in the Respondent's experiments. Therefore, in the Board's judgment, there is no evidence on file that this technical effect has been credibly obtained over the whole scope of Claim 1 of the patent in suit.

Therefore, the technical problem underlying the patent in suit in view of document (5) has to be formulated as the provision of a further detergent composition having similar grease removal properties.

2.9 The Board is satisfied that this problem was solved by the provision of a detergent composition comprising a lipolytic enzyme and an amine selected from those defined in Claim 1 of the patent in suit.

2.10 It remains to be decided whether the claimed solution involved an inventive step.

As said already above under point 2.5, document (5) disclosed detergent composition comprising amines and lipase; between the subject-matter disclosed by the patent in suit and document (5), there was an overlap lying for the formula according to the patent in suit

given under point 2.5 (a) in the substituents $R_4$ being $C_4$-$C_{12}$ according to the patent in suit and $R^1$ being $C_6$-$C_{22}$ according to document (5), and for the formula according to the patent in suit given under point 2.5 (b) in the $R_1$ substituents which may be $C_6$ to $C_{12}$ according to the patent in suit and $C_9$ to $C_{17}$ according to document (5).

Hence, there was a pointer for the skilled person in document (5) to try also a compound of formula I and II falling within the ambit of the patent in suit. Since amine derivatives used according to document (5) had the property to produce a performance increase being more than additive (page 5, lines 15 to 21) at concentrations being substantially lower than the usual surfactants, it was to be expected that the use of, e.g., a tertiary amine according to the patent in suit in combination with lipase also lead to an increase of grease removal performance.

2.11 The Board concludes that the subject-matter of Claim 1 does not imply an inventive step and, therefore, does not meet the requirements of Article 56 EPC.

## Order

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

The decision under appeal is set aside.

The patent is revoked.

The Registrar: The Chairman:

G. Rauh L. Li Voti