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D E C I S I O N
of 21 January 1999

Case Number: T 0055/94 - 3.3.6

Application Number: 85210325.9

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Language of the proceedings: EN

Title of invention:
Detergent composition

Patentee:
Unilever N.V., et al

Opponent:
Procter & Gamble E.T.C.
Henkel Kommanditgesellschaft auf Aktien

Headword:
Cellulase softener/UNILEVER

Relevant legal provisions:
EPC Art. 56

Keyword:
"Inventive step (no) - obvious combination of two known fabric softening agents"

Decisions cited:
T 0020/81, T 0495/91

Catchword:
-



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Boards of Appeal

Chambres de recours

Case Number: T 0055/94 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 21 January 1999

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Decision under appeal: Decision of the Opposition Division of the
European Patent Office posted 29 November 1993
revoking European patent No. 0 173 397 pursuant
to Article 102(1) EPC.

Composition of the Board:

Chairman: P. Krasa
Members: G. N. C. Raths
C. Holtz

Summary of Facts and Submissions

I. This appeal lies from the Opposition Division's decision revoking European patent No. 0 173 397 on the grounds that the subject-matter of the respective claims 1 of the then pending main and auxiliary request was considered to be obvious in view of the teachings of documents

- (1) DE-A-3 399 050;
- (2) GB-A-2 094 826;
- (3) GB-A-2 075 028;
- (5) DE-A-2 148 278; and
- (6) DE-A-3 339 050

submitted in two notices of opposition, both based on lack of inventive step and one of them in addition on lack of novelty and on insufficient disclosure.

II. Claim 1 of the main request read:

"An alkaline detergent composition for the cleaning and softening of fabrics comprising:

- (a) from 2 to 50% by weight of an anionic surfactant and/or nonionic surfactant;*
- (b) from 0.5 to 15% by weight of a cationic fabric-softening compound and*
- (c) from 0 to 80% by weight of a detergency builder, characterized in that it contains a fungal cellulase."*

Claim 1 of the auxiliary request differed therefrom by replacing "cellulase" by "cellulase having an alkaline pH optimum up to 11.5".

- III. The Opposition Division acknowledged the novelty of the subject-matter of the patent in suit.

In relation to inventive step, the Opposition Division argued in essence that the said subject-matter was obvious in particular over document (5), disclosing an increased softening effect of a rinse composition containing a combination of a cationic softener and of a fungal cellulase with an acidic performance optimum (hereinafter abbreviated "AFC"; page 6, line 37, to page 7, line 2, in combination with page 13, lines 13 to 15, and page 4, lines 30 to 34) and document (3), disclosing fungal cellulases to be used as main wash softeners and displaying their performance optimum in the alkaline pH range (hereinafter abbreviated "BFC"; page 1, lines 49 to 53). The Opposition Division further pointed out that citations (1), (2), (6) and (4) (= DE-A-2 009 721) gave further information as to how to incorporate cationic surfactants into main wash detergent compositions and as to how to avoid cellulase inhibition by cationic surfactants, respectively.

The Opposition Division also found that the experimental data given in the patent in suit could not support the existence of an unexpected effect since they were lacking any indication of their statistical significance.

- IV. The Appellant filed with the grounds of appeal a set of seven claims. The only independent claim 1 now reads as follows:

"An alkaline detergent composition for the cleaning and

softening of fabrics comprising:

- (a) *from 2 to 50% by weight of an anionic surfactant and/or nonionic surfactant;*
- (b) *from 0.5 to 15% by weight of a cationic fabric-softening compound and*
- (c) *from 0 to 80% by weight of a detergency builder, characterized in that*

it contains a fungal cellulase having an optimum activity at alkaline pH values."

V. On appeal, the Appellant (Patent Proprietor) argued

- that document (1) relating to a main wash detergent composition containing a cationic surfactant was the appropriate starting point for evaluating inventive step;
- that document (5) related to softening by a (pre)-soaking or by a rinse composition containing AFC and a cationic detergent thereby resulting in an increased softening effect and contained a warning against the use of AFC at an alkaline pH (page 4, lines 30 to 34);
- that, therefore, document (5) contained no incentive for a skilled person to provide softening main wash detergents containing a combination of BFC and a cationic surfactant since the effect of the replacement of AFC by BFC was not known;
- that, further, cationic detergents were known to inhibit BFC (document (2), page 2, lines 22 to 27)

and

- that this was corroborated by document (3) which did not mention the possibility of combining the BFC disclosed therein with a cationic softener; further
- that the data in the patent in suit showed a statistically significant increase in the softening effect of the claimed compositions on cotton fabric as compared to compositions containing only the one or the other component as single softening agent.

The Appellant concluded that for these reasons the subject-matter of the patent in suit was inventive.

VI. The Respondents (Opponents I and II) contested the statistical significance of the experimental data disclosed in the patent in suit and concluded that therefore a beneficial effect had not been demonstrated for the subject-matter of the patent in suit. They argued that it was obvious to combine the BFC known from document (3) with a cationic detergent in view of the disclosure of citation (5), since the warning in the latter document was valid only for AFCs and since methods for avoiding a possible inhibition of BFC by a cationic surfactant were known from documents (2) (page 15, lines 19 to 21) and (6) (page 26, lines 26 to 29).

VII. During oral proceedings which took place on 21 January 1999 before the Board, the Appellant submitted a further set of 7 claims (designated auxiliary request), claim 1 of which differed from the above quoted claim 1 by replacing "cellulase having" by "cellulase produced

by *Humicola insolens* DSM 1800 and having".

The Appellant requested that the decision under appeal be set aside and that the patent be maintained on the basis of either the claims submitted with the grounds of appeal (main request) or the claims submitted in the oral proceedings (auxiliary request).

The Respondents requested that the appeal be dismissed.

Reasons for the Decision

1. The appeal is admissible.

2. *Novelty*

The Board is satisfied that the subject-matter claimed according to the main request and according to the auxiliary request is not disclosed in any of the citations and is, therefore, novel. Since novelty has not been contested, no detailed reasoning needs to be given.

3. *Inventive step*

3.1 Main request

3.1.1 The patent in suit concerns a detergent composition exhibiting a softening effect on textiles and fabrics and comprising a fungal cellulase **having an optimum activity at alkaline pH values** (BFC) in conjunction with a cationic fabric-softening compound (page 2, lines 3 to 4, in combination with lines 57 to 58).

Laundry detergent compositions exhibiting a softening effect on fabrics (softening through wash effect) were

already known, e.g. from documents (1) and (3).

- 3.1.2 Document (1) discloses a detergent-softening composition comprising inter alia 5 to 40% by weight of a water-soluble anionic surfactant which is no soap and about 2 to 20% of a cationic surfactant in intimate mixture of 2 to 50% by weight (based on the weight of the cationic surfactant) of a water-soluble nonionic agent (see e.g. page 9, line 33, to page 10, line 27).

Document (3) discloses inter alia a main wash detergent composition containing as a harshness reducing agent a BFC, in particular the BFC produced by Humicola insolens DSM 1800, surfactants, in particular anionic and non-ionic surfactants in typical amounts of from 5 to 45 percent by weight, builders and other optional ingredients (page 1, lines 3 to 4, in combination with page 3, lines 46 to 51, with page 2, lines 26 to 28, and with page 2, line 61, to page 4, line 15).

Thus, the compositions disclosed in citations (1) and (3) differ in essence from those of claim 1 of the main request in that they lack either the BFC or the cationic softening agent, respectively.

- 3.1.3 The Appellant submitted that document (1) was the appropriate starting point for evaluating inventive step. The Board can accept this. According to the patent in suit, the technical problem to be solved with respect to the compositions of the state of the art, for which documents (1) and (3), among others, were said to be representative, was to increase the effectiveness of active ingredients and to provide a textile-softening detergent composition having improved cleaning and softening effects on a wider range of natural and synthetic fibres (page 2, lines 33 to 40 and lines 52 to 56).

3.1.4 In view of a lack of experimental data on the cleaning performance of the claimed compositions and further of the Appellant's admission that the data in the patent in suit relating to the softening of acrylic fabric were not statistically relevant, the Board cannot accept that the technical problem as defined in the patent in suit was actually solved.

Therefore the technical problem has to be reformulated (see T 0495/91, Reasons No. 4.2, not published in the OJ EPO). To that end only such effects can be taken into account which are supported by sufficient evidence (T 20/81, OJ EPO 1982, 217).

3.1.5 The only data in the patent in suit which remain for further consideration relate to the softening effect on cotton terry towelling. In the following table I data are compiled from the patent in suit, in particular from the second table on page 9 and from "Table 1" on page 10. All the compositions comprise the same particular basic detergent composition and the indicated softening agents.

Table I

Composition	Relative harshness in % after	
	1 wash	5 washes
Control (no softening agent)	100	102
A (4% amine)	96	102
B (4% cationic surfactant)	96	84
C ([60] cellulase = BCF)	93	89
D (4% amine & [60] BCF)	94	86
Invention (4% cationic & [60] BCF)	91	78

Whereas the Respondents argued that, in the absence of any information regarding their statistical significance, these data had no meaning at all, the Appellant submitted that they clearly showed an increased softening effect for the composition according to the invention as compared to composition B containing only cationic surfactant (and thus being representative for a composition according to document (1)).

According to the Appellant, the findings are corroborated by experiments with pre-harshened cotton terry towelling. The respective data are given in the following table II: They are compiled by the Board from the first table on page 11 of the patent in suit and from table 2 on the same page and show, so the Appellant argued, the beneficial effect of the composition according to the invention on pre-harshened cotton terry towelling:

Table II

Softening effect (The higher the figure, the better the softening benefit)			
Composition	after		
	1 wash	3 washes	5 washes
A (4% cationic surfactant)	34	52	33
B (0.8% BCF)	- 12	16	4
C (1.8% BCF)	- 2	13	- 14
Invention (4% cationic surfactant & 0.8% BCF)	57	61	75

Again the Respondents contested the statistical significance of these data.

3.1.6 In favour of the Appellant, the Board accepts that the compositions of the invention show an increased softening effect as compared to composition B (table I) or compositions A (table II) respectively, both representative for the composition of document (1). However, the increase achieved is only moderate, which can hardly be taken as an additive effect, let alone as a supra-additive effect. Nevertheless, in view of the achieved effect, the technical problem to be solved in relation to the compositions of document (1) can be defined as providing a main wash detergent composition with an increased softening effect on cotton fabric.

3.1.7 In view of the data available from the patent in suit, the Board is also satisfied that the existing technical problem is solved by the subject-matter of claim 1.

3.1.8 It remains to be decided whether or not the compositions of

claim 1 involve an inventive step.

A skilled person who was confronted with the existing technical problem as defined above under 3.1.6 would have consulted other documents relating to softening through wash laundry detergent compositions. From document (3) he would have learned that BFC, in particular BFC produced by Humicola insolens DSM 1800, had a high cellulase activity at the pH values of main wash solutions and could be used as a harshness reducing agent for a main wash detergent composition (document (3), page 1, lines 49 to 51, and lines 59 to 60, in combination with page 2, lines 26 to 27). Therefore, in the Board's judgment, for a person skilled in the art, it was obvious to try to solve the existing technical problem by adding to the compositions disclosed in document (1) additional amounts of the known softening agent BFC which had been disclosed in document (3) (see above no. 3.1.2).

This is even more true, as document (3) refers to the British specification No. 1 368 599 (page 1, lines 15 to 17, and line 53). This citation corresponds to document (5) which recommends the use of an AFC in combination with a cationic softening agent in acidic pre-wash or rinse steps (page 5, lines 29 to 35, in combination with page 4, lines 30 to 34, and page 13, lines 13 to 15). Document (5) further discloses explicitly that cationic detergents exhibit no inhibiting effect at all on AFCs (page 6, lines 35 to 37). However, document (5) contains a warning to use the AFC at a pH above 7. As reason for this warning it is pointed out that the (then known) fungal cellulases have a pH optimum of about 5 and a substantially reduced activity at pH values of above 7 (page 4, lines 30 to 33). Therefore, the said warning is limited to AFCs only and in the Board's judgment, a skilled person dealing with BFC would not have paid much attention to it. Therefore, the Board concludes that the overall teaching of document (5) results in a strong additional incentive for a skilled person to add BFC

to a cationic detergent containing composition as disclosed in document (3) with the reasonable expectation of achieving an increased softening effect and, thus, solving the underlying technical problem.

- 3.1.9 The Applicant argued that there was a prejudice in the art against combining a BFC with a cationic detergent since the latter would inhibit the BFC. He relied in this respect on document (2), in particular on page 2, lines 22 to 26, in combination with page 4, lines 30 and 31.

The Board cannot accept this argument. First of all, a technical statement in a single patent document cannot amount to a prejudice which is a technical opinion generally accepted by those skilled in the art but has to be taken as the personal opinion of the authors of the respective document which has to be evaluated in the light of all the other available information. In this context the Board notes that document (2) discloses that "*cationic surfactants act as the inhibitors in some cases: However, the co-presence of these substances with the cellulase is allowable if the direct contact of them is prevented by some means such as tableting or coating*" (page 15, lines 19 to 21). Therefore a skilled person, even when attaching more importance to the warning of document (2) than to the opposing statement in document (5) (see No. 3.1.8 above), would already have found in document (2) the means of overcoming such difficulties. Such safety measures also fall within the subject-matter of claim 1 of the patent in suit and in fact are contemplated in its description, according to which the BFC may be in the form of a non-dusting granulate (page 6, line 37) and thus physically separated from the cationic detergent.

It follows that the passing remark in document (2) would not have prevented the skilled person from trying the claimed means in order to solve the existing technical problem.

3.1.10 For the above reasons the Board concludes that the subject-matter of claim 1 does not involve an inventive step and, therefore, does not comply with the requirements of Article 56 EPC.

3.2 Auxiliary request

The feature which was incorporated in claim 1 of the auxiliary request (see No. VII above) was already known from document (3) as being a preferred embodiment (page 6, line 35, in combination with page 6, line 31). Therefore all the arguments advanced in respect of claim 1 of the main request apply also to claim 1 of the auxiliary request. On enquiry, the Appellant confirmed in the oral proceedings that no additional contribution to inventive step could be deduced from this additional feature which served only to restrict the claimed subject-matter.

For these reasons, the Board finds that the subject-matter of claim 1 of the auxiliary request does not involve an inventive step either.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:


G. Rauh


P. Krasa

