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Datasheet for the decision of 8 May 2009

Case Number: T 0223/07 - 3.3.06

Application Number: 00987562.6

Publication Number: 1240292

IPC: C11D 1/835

Language of the proceedings: EN

Title of invention:
Fabric softening compositions

Patentee:
Unilever PLC, et at

Opponent:
The Procter & Gamble Company

Headword:
Deposition aids/UNILEVER

Relevant legal provisions:
EPC Art. 56
RPBA Art. 13(1), (3)

Relevant legal provisions (EPC 1973):
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Keyword:
"Inventive step (no): comparative tests meaningless in the absence of the indication of the least significant difference of the values calculated by means of an analysis of variance - alleged technical problem not convincingly solved"

Decisions cited:
-

Catchword:

-

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Beschwerdekammern | Boards of Appeal | Chambres de recours

Case Number: T 0223/07 - 3.3.06

D E C I S I O N
of the Technical Board of Appeal 3.3.06
of 8 May 2009

Appellants: (Patent Proprietors)
Unilever PLC
Unilever House
Blackfriars
London
Greater London EC4P 4BQ (GB)

and

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

Representative:
Elliot, Peter William
Unilever Patent Group
Colworth House
Sharnbrook
Bedford MK44 1LQ (GB)

Respondent: (Opponent)
The Procter & Gamble Company
One Procter & Gamble Plaza
Cincinnati
Ohio 45202 (US)

Representative:
Merkle, Gebhard
TER MEER STEINMEISTER & PARTNER GbR
Patentanwälte
Mauerkircherstrasse 45
D-81679 München (DE)

Decision under appeal:
Decision of the Opposition Division of the European Patent Office posted 8 December 2006 revoking European patent No. 1240292 pursuant to Article 102(1) EPC.

Composition of the Board:

Chairman: P.-P. Bracke
Members: L. Li Voti
J. Geschwind

Summary of Facts and Submissions

I. The present appeal is from the decision of the Opposition Division to revoke the European patent no. 1 240 292 concerning a fabric softening composition.

II. In its notice of opposition the Opponent, referring *inter alia* to document

(1): WO 98/16538,

sought revocation of the patent on the grounds of Article 100(a) EPC, because of lack of novelty and inventive step of the claimed subject-matter.

III. In its decision, the Opposition Division found with regard to the claims according to then pending main request and auxiliary request that

- the claimed subject-matter was novel since none of the cited documents disclosed a fabric softening composition having the combination of features of claim 1;

- document (1) represented the closest prior art since it addressed the technical problem of providing fabric softening compositions capable of delivering good softening performance without simultaneously decreasing absorbency;

- the patent in suit aimed at solving the technical problem indicated in document (1) under more specific conditions, i.e. in the presence of a range of anionic carry over from the wash and a range of weight ratios

of the oily sugar derivative to the cationic fabric softening agent;

- however, the results of the comparative tests reported in table 2 of the patent in suit lacked an indication of the least significant difference for the softening scores reported in such tests and no conclusion could be drawn from these tests as to the alleged superiority of the claimed compositions; moreover, the comparative tests reported in tables 6 and 7 had been carried out with respect to very different commercial compositions which did not contain any oily sugar derivatives;

- therefore, it had not been proven that the technical problem indicated in the patent in suit had been effectively solved by means of a composition according to claim 1;

- the objective technical problem underlying the invention thus had to be defined as the provision of an alternative fabric softening composition based on oily sugar derivatives as fabric softening compounds and employing deposition aids;

- since document (1) disclosed specifically fabric softening compositions containing mixtures of an oily sugar derivative as fabric softening compound and a binary combination of a cationic fabric softener and a nonionic surfactant or of a nonionic surfactant and a cationic polymer as deposition aid and it specified also that a mixture of any of the deposition aids described could be employed, it was obvious for the skilled person, starting from the teaching of document

(1) to modify the specific examples of this document and to try a ternary mixture of deposition aids, thereby arriving at a composition according to claim 1;

- therefore, the subject-matter of claim 1 was novel over the cited prior art but it did not involve an inventive step.

IV. An appeal was filed against this decision by the Patent Proprietors (Appellants).

The Appellants submitted with the statement of the grounds of appeal a new set of claims according to the auxiliary request and an experimental report.

With its reply of 17 April 2008 the Respondent (Opponent) raised a new novelty objection based on the content of document (1).

The Respondent announced with letter of 21 January 2009 that it would not be represented at the oral proceedings.

Oral proceedings were held before the Board on 8 May 2009 in the absence of the Respondent.

During oral proceedings the Appellants withdrew all the requests submitted previously in writing and submitted a new set of 6 claims and an amended description to be considered as the sole request.

V. The set of 6 claims according to the sole request contains an independent claim 1 reading as follows:

"1. A fabric softening composition comprising:

(i) between 0.5%wt-30%wt of one or more cationic fabric softening compound(s) having two or more alkyl or alkenyl chains each having an average chain length equal to, or greater than, C_8, and wherein the cationic fabric softening compound is a quaternary ammonium compound having two or three C_{12-28} alkyl or alkenyl chains, connected to a nitrogen atom via at least one ester link
(ii) between 0.5 to 30wt% of at least one oily sugar derivative which is a liquid or soft solid derivative of a cyclic polyol or of a reduced saccharide, said derivative resulting from 35 to 100% of the hydroxyl groups in said polyol or in said saccharide being esterified or etherified, and wherein, the derivative has two or more ester or ether groups independently attached to a C_8-C_{22} alkyl or alkenyl chain, and
(iii) a deposition aid comprising a mixture of between 0.05 to 3wt% one or more nonionic surfactant(s), and between 0.01 to 5%wt one or more cationic polymer(s),

wherein the weight ratio of nonionic surfactant to cationic polymer is in the range from 1:10 to 10:1."

Dependent claims 2 to 5 relate to specific embodiments of the claimed fabric softening composition and claim 6 to a method of treating fabric by applying thereto a composition as claimed.

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

- the claimed subject-matter was novel over document (1);

- the comparative tests contained in the patent in suit and, in particular, those of table 7, showed that the technical problem underlying the invention indicated in the patent in suit, i.e. the provision of fabric softening compositions capable of delivering good softening performance without simultaneously decreasing absorbency in conditions having a range of anionic carry over from the wash and a range of weight ratios of the oily sugar derivative to the cationic fabric softening agent, had been effectively solved by means of a composition according to claim 1;

- in fact, since the softness scores reported in these examples had been calculated by means of an analysis of variance of the experimental values, the indication of the standard deviation for the reported values was unnecessary and the reported values showed credibly the benefit provided by a composition according to claim 1;

- therefore, it had been convincingly shown that the negative effect of the anionic carry-over had been successfully overcome by using a combination of cationic fabric softener (i) and deposition aid (iii);

- moreover, as indicated in the patent in suit, the claimed compositions showed as additional advantage that minor ingredients like polyelectrolytes could be incorporated without causing instability or

complexation of the oily sugar derivatives or of the cationic softening compound;

- furthermore, the comparison of the softness scores of examples 8 and 9 in table 7 showed that the selection of a quaternary ammonium compound having two or three C_{12-28} alkyl or alkenyl chains connected to a nitrogen atom via at least one ester link (hereinafter referred to as **ester quat**) as cationic fabric softening compound provided an improved softness with regard to the use of other types of cationic softeners;

- starting from the teaching of document (1), the skilled person would not have found in this document any incentive for modifying any of the compositions specifically exemplified in this document, which compositions contained at most a binary combination of deposition aids, by adding, for example, a further cationic compound such as an ester quat to the combination of cationic polymer and nonionic surfactant of example 51b, with the expectation of solving the technical problem underlying the invention;

- furthermore, the skilled person would not have tried to modify in this way the compositions known from document (1) as this would have resulted into a more uneconomical and complex method of preparation of the fabric softening composition;

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

VII. The Respondent submitted in writing that

- example 51b of document (1) destroyed the novelty of claim 1;

- neither the comparative tests contained in the patent in suit nor those submitted with the statement of the grounds of appeal demonstrated that the alleged technical problem indicated in the patent in suit had been effectively solved by means of a composition according to claim 1;

- the objective technical problem underlying the invention could only be considered to consist in the provision of an alternative softening composition;

- document (1) contained an explicit suggestion to use any mixture of the deposition aids indicated, which included cationic softeners, nonionic surfactants and cationic polymers;

- therefore, it was obvious for the skilled person to formulate a composition as claimed by simply following the teaching of document (1);

- the subject-matter of claim 1 thus did not involve an inventive step.

VIII. The Appellants request that the decision under appeal be set aside and that the patent be maintained according to the set of claims according to the sole request submitted during oral proceedings.

IX. The Respondent requests that the appeal be dismissed.

Reasons for the Decision

1. *Formal issues*

The Appellants submitted an amended set of claims as sole request during the oral proceedings before the Board.

Since this amended set of claims intended to deal with the new novelty objection submitted by the Respondent in writing (see point IV above), it did not modify the main point of discussion defined by the decision under appeal and by the statement of the grounds of appeal and could be easily dealt with by the Board, the Board finds this request to be admissible under the circumstances of the case (see RPBA Art. 13(1) and (3)).

2. *Article 123 EPC and Novelty*

The Board is satisfied that the claims according to the sole request comply with the requirements of Articles 123(2) and (3) EPC and are novel over document (1).

Since the appeal fails on other grounds no further details are necessary.

3. *Inventive step*

3.1 As explained in the description of the patent in suit, it was well known that fabric softener compositions, although increasing the softness of fabrics, often

simultaneously decrease their absorbency, i.e. their ability to take up water, which fact is particularly disadvantageous with towels where the consumer requires softness and high absorbency (paragraph 2).

In order to overcome this problem, it was known in the prior art to use fabric softening compositions comprising oily sugar derivatives as softening compound (paragraph 3). Moreover, in order to provide a good deposition of such sugar derivatives onto the fabric, it was usual to add a deposition aid such as a cationic fabric softener; however, the effectiveness of such a cationic material as deposition aid was particularly affected even by low levels of anionic carry over from the wash liquor, i.e. by the presence in the rinse liquor of residual anionic species such as anionic surfactants originating from the main washing step (paragraph 11). Therefore, in case of moderate to high anionic carry over and/or for ratios of said sugar derivative to said cationic softener of greater than 55:45, the deposition of the derivative onto the fabric and, consequently, the softening performance were reduced. Even though this drawback could be overcome by using greater amounts of the softening composition, this was undesirable on environmental and cost grounds (paragraph 12).

The technical problem underlying the invention thus is formulated in the patent in suit as the provision of a fabric softening composition based on oily sugar derivatives and cationic fabric softeners as deposition aid which provides good softening without simultaneously markedly decreasing absorbency across a range of anionic carry over from the wash and a range

of weight ratios of the oily sugar derivative to the cationic fabric softening compound (paragraph 13).

3.2 As agreed by all parties, document (1), dealing with the provision of a rinse added fabric softening composition which provides softening without affecting the absorbency of the fabric (page 1, lines 7 to 23 and page 3, lines 6 to 13), represents the most suitable starting point for the evaluation of inventive step. This document is in fact also referred to in paragraph 11 of the patent in suit as being representative of the prior art disclosing an oily sugar derivative as fabric softening compound and a cationic fabric softener as deposition aid.

3.3 According to the Appellants' submissions the compositions according to the patent in suit are superior to those specifically exemplified in document (1), which do not comprise a combination of an ester quat with a nonionic surfactant and a cationic polymer as deposition aids, insofar as they do not suffer from the above mentioned drawback due to a possible anionic carry over from the wash.

The Board remarks that the experimental report submitted with the statement of the grounds of appeal regards compositions comprising a dehydrogenated tallow dimethylammonium chloride as cationic softener, which compound is not an ester quat as required in claim 1 of the sole request. Therefore, this report cannot show whether the claimed compositions are effectively superior to those exemplified in document (1).

The patent in suit contains instead three sets of tests wherein a composition according to the sole request is compared with different compositions.

The formulations of examples 1 and 2 (according to claim 1) are compared with compositions A and B differing from the previous ones only insofar as they do not contain a cationic polymer deposition aid (see tables 1 and 2).

Furthermore, the compositions according to examples 3 and 9 are tested against composition D, the commercially available fabric softener "Comfort Dilute", which contains 4.5% of cationic fabric softener, as explained in the statement of the grounds of appeal (see table 6), and the compositions according to examples 9 to 12 are tested against composition E, which is the concentrated fabric softener "Ultra Snuggle" containing 22% of a mixture of cationic fabric softener, as explained in the statement of the grounds of appeal (see table 7).

The evaluation of the softening performance in the presence and absence of anionic carry over has been tested in the patent in suit by an expert panel of 4 people which followed a specific test protocol. Softness was assessed on an 8-point scale, the lowest numbers indicating better softening results, the softening scores having been calculated using an "Analysis of Variance" technique (see paragraph 113). The numerical differences between the softness scores of compositions according to claim 1 and the comparisons amount to at most 1.5 in table 2 and are less than 1 in tables 6 and 7.

Moreover, the Board remarks that the specific technique of analysis used has not been described in detail in the patent in suit and the softness scores reported in the tables do not contain an indication of the least significant difference (**LSD**) for each reported value.

Even though the indication of the **LSD** is certainly not required by the EPC, as submitted by the Appellants during oral proceedings, and such an indication would be indeed superfluous under certain circumstances, for example in the case of a large numerical difference between two scores, the Board finds that in the case of comparative tests reporting technical values which are calculated by means of an analysis of variance, the indication of the **LSD** for each reported value is essential for the evaluation of the reported values in a case, like the present one, wherein the numerical differences between the values to be compared cannot be considered to be large. The Board remarks, in fact, that the experimental report submitted with the statement of the grounds of appeal, wherein the softness scores had been calculated also by an analysis of variance as in the patent in suit, reports **LSD** values varying considerably from 1.18 to 1.46.

Furthermore, even though also the decision of the department of first instance indicated that the results of table 2 were meaningless in the absence of the indication of the **LSD** (see point III above), the Appellants did not bring any evidence that the skilled person would consider the indication of the **LSD** to be unnecessary in the present case since the calculated values can be esteemed to have been accurately determined.

Therefore, in the Board's judgement, in the absence of the indication of the **LSD** for each reported value it is not possible to draw from the tests reported in tables 2, 6 and 7 any reasonable conclusion as to the superiority or not of any tested composition.

The Board remarks also that, for the reasons mentioned above, it is not possible to derive from any of the tests contained in the patent in suit whether the softening capacity of any of the tested composition is more or less affected by the anionic carry-over or whether any composition is effectively insensitive to the presence of anionic surfactant.

Furthermore, the comparative compositions D and E, the complete formulations of which have not been made known by the Appellants, do not appear to contain any oily sugar derivative as the composition of document (1) (see claim 1 of this document) and as required in claim 1 of the patent in suit. Therefore, the comparisons with regard to such compositions are far more remote than the compositions of document (1) and, as already found in the decision of the department of first instance, are not suitable for showing that any of the technical advantages alleged by the Appellants has been effectively realised by means of a composition according to claim 1.

The Appellants, referring to paragraph 105 of the patent in suit, submitted during oral proceedings that the claimed compositions show as an additional technical advantage that they are stable even though

optional minor ingredients such as polyelectrolytes are added thereto.
The Board remarks that claim 1 does not mention at all the presence of polyelectrolytes. Moreover, said paragraph 105 clarifies that stability problems may occur when, in the preparation of the softening composition, polyelectrolytes are added **before** the oily sugar derivatives and the softening compound and that instead the above mentioned positive effect is obtained only if such polyelectrolytes are added **after** the other compounds. Therefore, the alleged technical improvement can exist only in compositions prepared by means of a specific sequence of process steps which are not part of claim 1 and is not realised by all compositions encompassed by the wording of claim 1.

Therefore, this alleged technical effect has to be disregarded in the evaluation of inventive step.

Finally, the alleged effect that ester quats are superior in softness to other softening materials, apparently shown, according to the Appellants, by a comparison of examples 8 and 9, is not supported by any evidence since, as explained hereinabove, the differences of the softness scores reported in table 7 cannot be considered to be significant in the absence of an indication of the **LSD.**

Therefore, also this alleged technical effect has to be disregarded in the evaluation of inventive step.

The Board concludes that, as correctly found in the decision under appeal, the technical problem underlying the invention, starting from the disclosure of document

(1), can only be defined as the provision of an alternative softening composition based on oily sugar derivatives and deposition aids which provides softening without decreasing the absorbency of the treated textiles.

The Board is satisfied that this technical problem has been successfully solved by means of a composition according to claim 1.

3.4 Document (1) teaches to use a deposition aid in order to assure the deposition of component (ii) onto the fabric so that the absorbency of the treated textile is not decreased. Such a deposition aid can be, for example, a cationic compound such as a cationic softener or a cationic polymer or a nonionic surfactant or an anionic surfactant or mixtures thereof (page 9, line 20 to 26).

Particularly preferred fabric softening deposition aids are ester quats (page 11, line 22 to 30) which are, for example, used in the compositions of examples 28 to 32, comprising 2 to 4% by weight of component (ii) and 0.86 to 2.57% of the ester quat as deposition aid.

Explicitly suggested mixtures are also those of cationic and nonionic surfactants or of a fabric softening compound with a polymeric deposition aid (page 10, lines 4 to 7) and, in particular, that of example 51b relating to a fabric softening composition comprising 4.5% by weight of oily sugar derivatives of type (ii), 0.5% of a nonionic surfactant and 0.2% of a cationic polymer, the latter components corresponding to components (iii) of claim 1 of the patent in suit,

which composition differs from that according to claim 1 **only insofar as it does not contain between 0.5 to 30% by weight of an ester quat**.

Document (1) teaches explicitly that mixtures of any of the mentioned deposition aids may be used (page 15, lines 16 to 17).

Therefore, even though document (1) does not contain any explicit disclosure of a combination of more than two deposition aids, it would have been obvious for the skilled person, faced with the technical problem of providing alternative softening compositions based on oily sugar derivatives and deposition aids which provide similar softening without decreasing the absorbency of the treated textiles, to follow the overall teaching of document (1) and to try, in the alternative, a softening composition based on oily sugar derivatives like that of example 51b modified by using a mixture of more than two deposition aids, for example a mixture of the cationic polymer and nonionic surfactant aids used in example 51b with the amount of ester quat used in example 29.

In fact, document (1) does not contain any hint which would have prevented the skilled person to try more costly compositions like one containing a ternary mixture of deposition aids instead of a binary one.

Therefore, the Board concludes that the skilled person would have arrived at the subject-matter of claim 1 by simply following the teaching of document (1).

The subject-matter of claim 1 thus lacks an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar: The Chairman:

V. Commare P.-P. Bracke