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**Datasheet for the decision
of 11 January 2013**

Case Number: T 1730/10 - 3.3.06

Application Number: 03768843.9

Publication Number: 1560905

IPC: C11D 3/00, C11D 1/62,
C11D 1/645

Language of the proceedings: EN

Title of invention:

Fabric softening composition containing esterquat with
specific ester distribution and sequestrant

Patentee:

Colgate-Palmolive Company

Opponents:

UNILEVER PLC / UNILEVER NV

Headword:

Esterquats with specific ester distribution/COLGATE-PALMOLIVE

Relevant legal provisions (EPC 1973):

EPC Art. 56

Keyword:

"Inventive step (yes): prior art leading away from claimed
subject-matter"

Decisions cited:

-

Catchword:

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Case Number: T 1730/10 - 3.3.06

DECISION
of the Technical Board of Appeal 3.3.06
of 11 January 2013

Appellants:
(Opponents)

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Respondent:
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Representative:

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Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted
15 June 2010 concerning maintenance of European
patent No. 1560905 in amended form.**

Composition of the Board:

Chairman: P.-P. Bracke
Members: L. Li Voti
U. Tronser

Summary of Facts and Submissions

- I. The present appeal is from the decision of the Opposition Division to maintain in amended form the European patent no. 1 560 905, concerning a fabric softening composition containing an esterquat.
- II. In its notice of opposition the Opponents sought the revocation of the patent on the grounds of Articles 100(a) EPC 1973, because of lack of novelty and inventive step of the claimed subject-matter.

The following document was cited *inter alia* in support of the opposition:

(1): US-A-5916863.

- III. The Opposition Division found in its decision that the claims according to the then pending second auxiliary request complied with all the requirements of the EPC.

In particular, as regards inventive step, the Opposition Division found that

- document (1) represented the closest prior art;
- even though document (1) taught that best results in terms of softening performance and stability profiles were obtained by using an esterquat (i.e. an esterified quaternary ammonium compound) prepared from a mixture of fatty acid and tertiary amine with a molar ratio of 1.7:1, the use of such a molar ratio did not lead necessarily to an ester distribution in the resulting product as required in the patent in suit;

- the comparative data of the patent in suit did not represent examples 2 and 3 of document (1); however, the comparative data B showed that esterquats falling within the broadest teaching of document (1) had a worse viscosity profile than a composition according to the patent in suit;

- considering the teaching of examples 2 and 3 of document (1), the objective technical problem underlying the invention consisted only in the provision of an alternative liquid fabric softening composition comprising an esterquat in combination with a sequestering agent;

- however, the skilled person, by considering the teaching of document (1), would have had no motivation to lower the diester content of the esterquat below 60 wt% into the range required by the patent in suit.

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

The Appellants requested in writing that the decision under appeal be set aside and the patent be revoked.

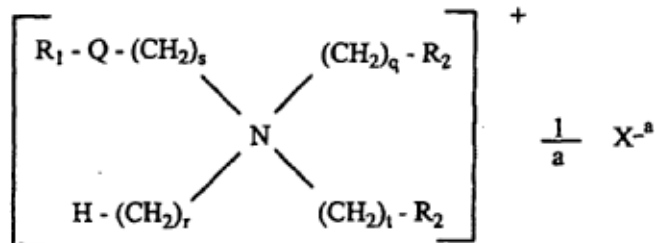
Oral proceedings were held before the Board on 11 January 2013 in the absence of the duly summoned Appellants.

The Respondent (Patent Proprietor) requested that the appeal be dismissed or, in the alternative, that the patent be maintained on the basis of the auxiliary request filed with the letter dated 28 February 2011.

V. The independent claim 1 of the set of claims according to the Respondent's main request, which corresponds with the set of claims found by the Opposition Division to comply with all the requirements of the EPC, reads as follows:

"1. A dispersible aqueous rinse cycle fabric softening composition containing an esterquat softening compound which remains physically stable and which is characterized by a stable viscosity over a wide range of ambient temperatures and for extended periods of time such that it significantly minimizes the problems of yellowing and malodor in softened fabrics, and malodor in the composition, which composition comprises:

(a) from about 1% to about 25% by weight, of a biodegradable fatty ester quaternary ammonium compound derived from the reaction of an alkanol amine and a fatty acid derivative followed by quaternization, said fatty ester quaternary ammonium compound being represented by the formula:



wherein Q represents a carboxyl group having the structure -OCO- or -COO-; R1 represents an aliphatic hydrocarbon group having from 8 to 22 carbon atoms; R2 represents -Q-R1 or -OH; q, r, s and t, each

independently represent a number of from 1 to 3; and X^{-a} is an anion of valence a ; and wherein said fatty ester quaternary ammonium compound is comprised of a distribution of monoester, diester and triester compounds, the monoester compound being formed when each R_2 is $-OH$; the diester compound being formed when one R_2 is $-OH$ and the other R_2 is $-Q-R_1$; and the triester compound being formed when each R_2 is $-Q-R_1$; and wherein the normalized percentage of monoester compound in said fatty ester quaternary ammonium compound is from 31% to 37%; the normalized percentage of diester compound is from 53% to 59%, and the normalized percentage of triester compound is from 8% to 12%, all percentages being by weight;

- (b) from about 0.001% to about 2%, by weight, of a sequestering agent;
- (c) from about 0% to about 1%, by weight, of an electrolyte; and
- (d) from about 0% to about 2%, by weight, of an emulsifier;
- (e) from about 0% to about 5%, by weight, of a perfume; and
- (f) balance water."

This set of claims contains also dependent claims 2 and 3, relating to specific embodiments of the composition of claim 1, and claim 4 concerning a method of softening fabrics comprising forming an aqueous solution containing an effective amount of the fabric softening composition of claim 1, and then contacting the fabrics to be softened with said aqueous solution.

VI. The Appellants submitted in writing that

- document (1) concerned the technical problem of storage stability over a wide range of temperatures of a fabric softening composition containing esterquats, i.e. a technical problem similar to that dealt with in the patent in suit;

- by considering that the content of the mono-, di- and triester components of a triethanolamine (TEA) based quaternary ammonium compound was typically associated with an error of $\pm 2\%$, the ester components distribution of the esterquat used in examples 2 and 3 of document (1) was very similar to that of the esterquat of claim 1 of the main request;

- the patent in suit did not contain any comparative data with respect to the esterquat used in examples 2 and 3 of document (1);

- the objective technical problem underlying the invention thus consisted in the provision of an alternative composition;

- document (1) taught to use an esterquat obtained from a mixture of fatty acid and tertiary amine with a molar ratio of about 1.7 to 1 in order to obtain best results; since this molar ratio was the same used in the patent in suit, the skilled person would have arrived at an esterquat of claim 1 of the main request by following the teaching of document (1);

- therefore, it was obvious for the skilled person, by following the teaching of document (1), to use a fabric

softening composition comprising an esterquat according to the patent in suit instead of that used in examples 2 and 3.

VII. The Respondent submitted in writing and orally *inter alia* that

- the Appellants had not submitted any evidence that the percentages of the ester components of the esterquat disclosed in document (1) were associated to an error of $\pm 2\%$; moreover, even considering such an error, the amount of mono- and diester components in the esterquat of examples 2 and 3 of document (1) would fall outside the limits of the percentages required by claim 1 according to the main request;

- as indicated in paragraph 18 of the patent in suit and admitted by the Appellants in their letter of 13 October 2010 (page 3, third full paragraph), not only the molar ratio of fatty acid to tertiary amine used in the preparation of the esterquat but also the chosen process conditions would influence the ester components distribution in the final product; therefore, a molar ratio of fatty acid to tertiary amine of about 1.7:1 would not lead necessarily to an ester content distribution as required in claim 1 of the main request;

- even though document (1) dealt with the problem of storage stability over a wide range of temperatures of fabric softening compositions containing esterquats, it did not specify whether the stability addressed to in the description and in the examples concerned a viscosity profile over six weeks as tested in the patent in suit; moreover, the comparative data

contained in the patent in suit were significant since the esterquat used as comparison had an ester components distribution falling within the teaching of document (1) and its diester content was the same as that of the composition exemplified in document (1);

- document (1) taught to use, preferably, an esterquat having a diester content greater than 60 wt% and did not suggest that an esterquat having a diester content lower than 60 wt% and a monoester content as required in claim 1 of the main request would provide a better viscosity profile on prolonged storage;

- therefore, the teaching of document (1) would lead away from the claimed subject-matter.

Reasons for the Decision

1. Respondent's main request

1.1 *Inventive step*

1.1.1 The invention of the patent in suit relates to liquid fabric softening compositions containing esterquats in combination with a sequestering agent, which compositions are suitable for use in the rinse cycle of an automatic home washing machine and remain physically stable and highly active over extended periods of time (see paragraph 1 of the patent in suit).

As explained in the description, it was known that esterquat compounds are unstable in the presence of heavy metal salts, such as iron, which are present in

hard water. In fact, these heavy metals interact with the unsaturated esterquat compounds causing the generation of malodour and the formation of a yellowish colour which ultimately may stain the softened fabrics. Therefore, sequestering agents were conventionally incorporated into fabric softening compositions to counteract such a negative effect. However, sequestering agents generally catalyze the hydrolysis of the esterquat compounds and thereby adversely affect *inter alia* the esterquat viscosity stability upon aging, particularly when the softening composition is allowed to age at elevated temperatures (see paragraph 8).

Therefore, the technical problem underlying the invention is formulated in the patent in suit as the provision of an esterquat-based fabric softening composition which remains physically stable and provides a stable viscosity in the presence of sequestering agents over a wide range of ambient temperature and for extended periods of time (paragraph 9).

- 1.1.2 Both parties chose document (1) as suitable starting point for the evaluation of inventive step.

In fact, document (1), addresses the technical problem of providing an esterquat based fabric softening composition, which is non-yellowing, has improved softening performance and desirable softening properties such as improved viscosity and stability (see column 3, lines 26 to 36), i.e. a technical problem very similar to that of the patent in suit.

Therefore, the Board chooses also document (1) as the most suitable starting point for the evaluation of inventive step.

- 1.1.3 In the Appellants' view, document (1) had already solved the same technical problem addressed to in the patent in suit and the comparative data contained in the patent in suit were not relevant since they did not contain any comparison with the esterquat used in examples 2 and 3 of document (1), which esterquat differed from that of claim 1 of the main request only insofar as it contained more of the diester and less of the monoester components. Therefore, the technical problem underlying the invention consisted only in the provision of an alternative composition.

The Board remarks that document (1), though showing that the disclosed compositions are storage stable within a temperature range of 4 to 50°C (see column 18, lines 33, 34, 64 and 65), does not specify whether the stability addressed to in its examples and in the description concerns specifically the viscosity profile of the softening composition upon an extended period of time like it was measured in example 1 of the patent in suit, which concerns specifically the viscosity profile of samples aged at a temperature from 4 to 49 °C for 6 weeks (see paragraph 39).

Therefore, the Board cannot agree with the Appellants that document (1) was directed to solve exactly the same technical problem as that indicated in the patent in suit.

Document (1) discloses indeed in examples 2 and 3 a fabric softening composition differing from that

claimed in claim 1 of the main request only insofar as the esterquat used in said compositions, which esterquat contains a normalized percentage based on 100% of 27.46 wt% monoester, 61.66 wt% diester and 10.88 wt% triester components, has more diester and less monoester components than the esterquat of claim 1 of the main request.

The Appellants thus were correct in remarking that example 1 of the patent in suit compares a softening composition containing an esterquat according to the invention, having a normalized percent distribution of 34 wt% monoester, 56 wt% diester and 10 wt% triester components, with a composition not in accordance with said examples 2 and 3, since the esterquat has a different ester components distribution of 21 wt% monoester, 61 wt% diester and 18 wt% triester. However, the latter esterquat, though not being identical to that used in examples 2 and 3 of document (1), has also more diester and less monoester components than the esterquat of claim 1 of the main request, contains practically the same amount of diester of the esterquat of examples 2 and 3 of document (1) and falls within the broader teaching of this document, which encompasses preferred esterquats having an amount of diester greater than 60 wt% and a triester content of less than 20 wt% (see claim 10 and column 5, lines 45 to 52).

Therefore, example 1 of the patent in suit compares undoubtedly a composition containing an esterquat according to the claimed invention with one containing an esterquat according to the teaching of document (1).

In the light of the comparative tests contained in the patent in suit (see paragraph 40), the Board finds that it has been convincingly shown that a composition containing an esterquat as claimed has superior viscosity profile upon storage for an extended period of time than a composition comprising an esterquat according to the teaching of document (1).

In fact, on the basis of the teaching of document (1), there is no reason to assume that the esterquat specifically used in the examples 2 and 3 of this document would provide a very different viscosity profile upon storage than the esterquat also falling within the teaching of document (1) used as comparison in the example of the patent in suit.

Therefore, the Board is convinced that the comparison contained in the patent in suit is a valid comparison with respect to the closest prior art and that the technical problem underlying the invention, starting from the teaching of document (1), has to be formulated as suggested by the Respondent, i.e. as the provision of an alternative fabric softening composition containing an esterquat and a sequestering agent, which composition has a better viscosity profile over a wide range of ambient temperature and for extended periods of time.

The Board thus finds that this technical problem has been solved by using an esterquat having the characteristic ester distribution indicated in claim 1 of the main request.

- 1.1.4 In the Board's view the overall teaching of document (1) would lead the skilled person, looking for an

improvement of the technical properties of the softening composition, to select an esterquat having an ester distribution having a diester content above 60 wt%, as taught in column 5, lines 49 to 50, in claim 10 and in examples 2 and 3; moreover, there is no suggestion in this document to use any specific range for the monoester component of the esterquat, its amount being limited by the amounts of the diester and triester components and being in the examples 2 and 3 of document (1) of about 27 wt%.

The Board remarks also that the Appellants' allegation concerning the error contained in the calculated ester distribution of the esterquat used in examples 2 and 3 of document (1) cannot be accepted since no evidence was submitted by the Appellants in this respect. Moreover, as remarked by the Respondent, even the consideration of such an error of $\pm 2\%$ would not lead to an ester distribution in the esterquat as claimed in the patent in suit.

Moreover, even though both the patent in suit and document (1) suggest to use the same molar ratio of fatty acid and tertiary amine for the preparation of the esterquat, it is undisputed that the process conditions affect the final ester distribution, as stated in the patent in suit (paragraph 18) and confirmed in the Appellants' letter of 13 October 2010 (page 3, third full paragraph). Therefore, the use of the same molar ratio of fatty acid and tertiary amine could lead to a very different ester distribution. Furthermore, in the light of the overall teaching of document (1), the skilled person would have been led to select process conditions providing a diester content

above 60 wt% and not to a lower diester content as required in the patent in suit.

- 1.1.5 With regard to the technical advantage obtained by the selection of a specific ester distribution for the esterquat, document (1) refers specifically only to an improved performance as well as colour and odour stability (column 6, lines 1 to 5) and to the above discussed generic storage stability but it is silent about an improvement of the viscosity profile over a wide range of ambient temperature and for extended periods of time.

The Board thus concludes that the teaching of document (1) would have led the skilled person away from selecting an esterquat having an ester distribution as required in claim 1 of the main request for obtaining the desired improvement in viscosity profile over a wide range of ambient temperature and for extended periods of time.

Therefore, the subject-matter of claim 1 involves an inventive step.

- 1.1.6 For the same reasons, the dependent claims 2 and 3 and the process of claim 4, concerning the use of a composition according to claim 1 in a method for softening fabrics, involve also an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

D. Magliano

P.-P. Bracke