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D E C I S I O N
of 28 October 2003

Case Number: T 0391/02 - 3.3.6

Application Number: 96925294.9

Publication Number: 0839179

IPC: C11D 3/20

Language of the proceedings: EN

Title of invention:

Concentrated, water dispersible, stable, fabric softening compositions

Applicant:

THE PROCTER & GAMBLE COMPANY

Opponent:

-

Headword:

Principal solvent/PROCTER AND GAMBLE

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step (no): selection of combinations of known solvents for achieving a result already known from the prior art - obvious to try"

Decisions cited:

T 0020/81

Catchword:

-



Case Number: T 0391/02 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 28 October 2003

Appellant:

THE PROCTER & GAMBLE COMPANY
One Procter & Gamble Plaza
Cincinnati
Ohio 45202 (US)

Representative:

Morelle, Evelyne Charlotte Isabelle
N.V. Procter & Gamble Services Company S.A.
Temselaan 100
BE-1853 Strombeek-Bever (BE)

Decision under appeal:

Decision of the Examining Division of the
European Patent Office posted 9 November 2001
refusing European application No. 96925294.9
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: P. Krasa
Members: L. Li Voti
M.-B. Tardo-Dino

Summary of Facts and Submissions

I. This appeal lies from the decision of the Examining Division to refuse European patent application No. 96 925 294.9, relating to an aqueous fabric softening composition.

II. In its decision, the Examining Division, referring to document

(1): EP-A-0296995,

found that the claimed subject-matter lacked an inventive step in the light of the teaching of this document.

III. An appeal was filed against this decision.

The Board expressed its provisional opinion in a communication dated 23 June 2003 as annex to the summons to attend oral proceedings.

The Appellant was informed *inter alia* that

- document (1) suggested the use of alcohols, polyols and ethers and mixtures thereof for preparing a clear and stable concentrated fabric softening composition comprising ester quats and a limited amount of solvents, which composition did not gel upon dilution in water;
- some of the solvents preferably used in document (1), e.g. n-propanol, had a ClogP according to the present application and had no centre of symmetry;

- it would have thus been obvious for the skilled person to try various combinations of known solvents belonging to the general classes indicated in document (1), e.g. combinations of solvents having a ClogP within the range of present claim 1 with solvents outside this range and e.g. specifically used in that document, in order to test their suitability for obtaining clear, stable compositions;
- the simple selection of combinations of known solvents for achieving a result already known from the prior art did not appear thus to amount to an inventive step.

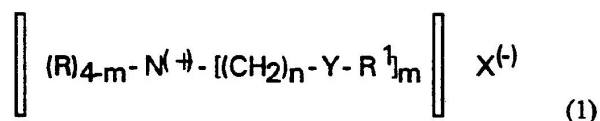
IV. During the oral proceedings held before the Board on 28 October 2003 the Appellant filed an amended set of 4 claims to be considered as the only request.

Claim 1 of this request reads as follows:

"1. An aqueous, stable, fabric softener composition comprising:

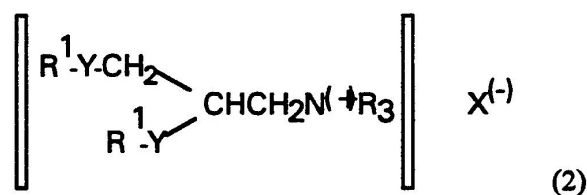
A. from 15% to 70% by weight of the composition of a fabric softener active selected from the group consisting of:

1. softener having the formula:



wherein each R substituent is a short chain C₁-C₆, preferably C₁-C₃ alkyl or hydroxyalkyl group, e.g. methyl (most preferred), ethyl, propyl, hydroxyethyl and the like, benzyl, or mixtures thereof; each m is 2 or 3; each n is from 1 to 4; each Y is -O-(O)C- or -C(O)-O-; the sum of carbons in each R¹, plus one when Y is -O-(O)C-, is C₆-C₂₂, preferably C₁₄-C₂₀, but no more than one YR¹ sum being less than 12 and then the other YR¹ sum is at least 16, with each R¹ being a long chain C₅-C₂₂(or C₇-C₂₁)hydrocarbonyl or substituted hydrocarbonyl substituent, preferably C₁₀-C₂₀(or C₉-C₁₉)alkyl or alkenyl, most preferably C₁₂-C₁₈(or C₁₁-C₁₇)alkyl or alkenyl and where, when said sum of carbons is C₁₆-C₁₈ and R¹ is a straight chain alkyl or alkenyl group, the Iodine Value (hereinafter referred to as IV) of the parent fatty acid of this R¹ group is preferably from 40 to 140, more preferably from 50 to 130 and most preferably from 70 to 115 (as used herein, the Iodine Value of a "parent" fatty acid or "corresponding" fatty acid is used to define a level of unsaturation for an R¹ group that is the same as the level of unsaturation that would be present in a fatty acid containing the same R¹ group); and wherein the counter-ion X⁻ can be any softener-compatible anion, preferably chloride, bromide, methylsulfate, sulfate and nitrate, more preferably chloride; wherein each of R and R¹ is optionally substituted with alkoxy and hydroxyl groups;

2. softener having the formula:



and

3. mixtures thereof;
- B. from 10% to less than 40% by weight of the composition of one or more principal solvents having a ClogP of from 0.15 to 0.64 and an asymmetric structure; solvents selected from the group consisting of 2,2,4-trimethyl-1,3,-pentanediol; the ethoxylate, diethoxylate, or triethoxylate derivatives of 2,2,4-trimethyl-1,3,-pentanediol and/or 2-ethyl-1,3-hexanediol can be used at levels that would not be sufficient to produce a clear product; wherein said principal solvent is selected from the group consisting of 1,2-butanediol, 2,3-dimethyl-; 1,2-butanediol, 3,3-dimethyl-; 2,3-pentanediol, 2-methyl-; 2,3-pentanediol, 3-methyl-; 2,3-pentanediol, 4-methyl-; 2,3-hexanediol; 1,2-butanediol, 2-ethyl-; 1,2-pentanediol, 2-methyl-; 1,2-pentanediol, 3-methyl-; 1,2-pentanediol, 4-methyl-; 1,2-hexanediol; 2,2,4-trimethyl-1,3,-pentanediol; the ethoxylate, diethoxylate or triethoxylate derivatives of 2,2,4-trimethyl-1,3,-pentanediol; 2-ethyl-1,3-hexanediol; and mixtures thereof;
- C. from 1% to 10% of low molecular weight water-soluble solvents selected from the group consisting of ethanol; isopropanol; propylene glycol; 1,3-propanediol; propylene carbonate; and mixtures thereof;
- D. the balance being water,
wherein the molar ratio of said principal solvent to said fabric softener active is not less than 3."

Dependent claims 2 to 4 relate to specific embodiments of the claimed composition.

V. The Appellant has submitted in writing and orally during oral proceedings *inter alia* that

- document (1) deals with a similar technical problem as the present invention but teaches to use a water-soluble solvent in combination with a water-soluble cationic compound in order to overcome the viscosity and formulation problems encountered in concentrated softening compositions;
- the technical problem underlying the present application is thus to be seen as the provision of compositions having properties similar to those of document (1) without requiring a water-soluble cationic compound and amounts of water-soluble volatile solvents greater than 10% by weight;
- this specific problem has been solved by selecting a narrow and well defined solvent system containing specific asymmetric solvents not suggested in the prior art instead of the water-soluble cationic compound of document (1); the selected asymmetric solvents having a specific ClogP perform furthermore better than similar solvents having a ClogP outside the claimed range;
- the claimed subject-matter involves thus an inventive step.

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

the basis of the claims 1 to 4 filed during oral proceedings.

VII. At the end of the oral proceedings the chairman announced the decision of the Board.

Reasons for the Decision

1. The Board is satisfied that the claims filed during oral proceedings meet the requirements of Articles 84 and 123(2) EPC and that the claimed subject-matter is novel over the cited prior art.

Since the appeal fails on other grounds further details are unnecessary.

2. *Inventive step*

2.1 The present application and, in particular, the subject-matter of claim 1, relates to an aqueous, stable, fabric softener composition comprising 15 to 70% by weight of a specific fabric softener comprising ester groups (hereinafter referred to as "ester quat"), 10 to less than 40% by weight of a selected principal solvent chosen from the group of hexanediol and octanediol isomers, which principal solvent is comprised at a molar ratio to the fabric softener of at least 3 to 1; 1 to 10% of a selected low molecular weight water-soluble solvent; and water.

As explained in the present application, concentrated fabric softening compositions are formulated with high amounts of solvents in order to provide a clear product;

however, such compositions tend to gel or precipitate at lower temperatures or to solidify or gel upon addition to rinse water (page 1, lines 16 to 27). Moreover, some of the solvents used in such compositions, such as isopropanol, are volatile and therefore provide a strong odour to the compositions and are not very effective too (see page 23, lines 14 to 15).

In the description of the application the goal of the invention is seen as the provision of such a concentrated softening composition comprising a reduced amount of less than 50% by weight of solvents (page 1, lines 30 to 32) and especially a reduced amount of volatile solvents providing a bad odour (page 23, lines 6 to 7).

The Board, in agreement with the decision of first instance and with the Appellant, considers therefore document (1) as the best starting point for evaluating inventive step, since this document deals successfully with the problem of providing a clear and stable concentrated fabric softening composition comprising ester quats and a limited amount of less than 50% by weight of solvents, which composition does not gel upon dilution in water (see page 2, line 62 to page 3, line 17 and page 3, lines 23 to 40).

The compositions disclosed in this document differ from the subject-matter of claim 1 of the present application insofar as they comprise a different solvent mixture.

The fact that the compositions of document (1) comprise necessarily a water-soluble cationic compound does not amount instead to a further technical difference, as the compositions of present claim 1 can also comprise such compounds, which are regarded as suitable dispersing agents (see whole page 81 of the present application).

Moreover, as indicated by the Board during oral proceedings, document (1) discloses in its example 7, a composition differing from the subject-matter of present claim 1 only insofar as it comprises 11% of isopropanol instead of no more than 10% and does not comprise the selected principal solvent; this known composition has a low viscosity and does not gel upon addition to cold water and therefore solves already the above mentioned technical problems.

- 2.2 The Appellant has defined the technical problem underlying the present invention during oral proceedings as the provision of compositions having properties similar to those of document (1) without requiring a water-soluble cationic compound and an amount of water-soluble volatile solvents greater than 10% by weight.

As regards the partial technical problem of providing a stable concentrated composition without a water-soluble cationic compound, the claimed compositions can comprise instead such water-soluble cationic compounds as explained in point 2.1 above. Therefore, not every embodiment of the claimed subject-matter can be considered to have solved the partial technical problem mentioned above.

The Board concludes that this partial technical problem must thus be disregarded (see, for example, T 0020/81, OJ EPO 1982, 217, point 3 of the reasons for the decision).

The technical problem underlying the claimed invention has thus to be reformulated in more simple terms as the provision of a composition having properties similar to those of document (1) but requiring a lower amount of water-soluble volatile solvents.

The Board has no doubts that the claimed compositions solve the above mentioned technical problem.

- 2.3 According to the teaching of document (1) the softening agent can be comprised in amounts of 10 to 50% by weight and the solvent in amounts of 2 to 35% by weight (page 3, lines 27 to 36). Moreover, such a solvent has to be selected among the general classes of alcohols, polyols and ethers and mixtures thereof and, preferably, from isopropanol, isobutanol, n-propanol, methyl-2-pentenediol-2,4, which is a hexandiol isomer, and others (page 6, lines 33 to 36).

Therefore, the Board finds that it was obvious for the skilled person, following the teaching of document (1), to use the specific solvents mentioned above as well as mixtures thereof and to try also structurally similar solvents such as other hexandiol isomers, e.g. methyl-2-pentenediol-2,3, which is one of the solvents selected in present claim 1. Therefore, it was also obvious to try mixtures of such solvents, e.g. mixtures with the preferred isopropanol, in amounts in

accordance with present claim 1, e.g. up to 10% of isopropanol and an amount greater than 20% of the hexandiol solvent. The molar ratio required by present claim 1 would thus be automatically complied with by selecting the concentrations suggested in document (1), for example by using equal or greater amounts of the hexandiol solvent as compared with the softening ester quat.

- 2.4 The Appellant has argued that only the selected solvents of claim 1 could bring about the desired results, whilst solvents like isopropanol and methyl-2-pentenediol-2,4 (specifically cited in document (1)) were considered as inoperable (see e.g. page 23, line 13; page 26, sixth line from the bottom; page 60, lines 15 to 16 and page 60, line 39 to page 61, line 12).

The Board remarks that this teaching contradicts at least partially the teaching of document (1), which shows that the problem underlying the present application can be solved by using solvents declared as inoperable in the present application.

Moreover, the list of operable and inoperable isomers in the present application appears to have been defined, as suggested by the Appellant during oral proceedings, on the basis of the test described on page 24, i.e. by carrying out the described test on a composition comprising 27% of a specific softener, 16 to 20% of a principal solvent and 4% of ethanol. This composition, however, is in the Board's view not representative for the whole range of claimed compositions, which encompass e.g. compositions comprising cationic

dispersing agents and no ethanol (such as those preferred in document (1)) or comprising minor amounts of softeners, e.g. 15% by weight, or greater amounts of solvents in a range of up to less than 40% of principal solvent and up to 10% of water-soluble solvent. It is thus to be expected that a similar test carried out with a lower amount of softeners and higher amounts of solvents within the limits of claim 1 would lead to different results. In such a case the solvents considered "inoperable" under the test disclosed on page 24 could become "operable" under the modified test.

The Appellant has thus not provided any convincing evidence that the whole range of compositions selected in claim 1 would possess other, e.g. superior, properties than the compositions specifically suggested in document (1).

Therefore, in the Board's judgement, the list of operable and inoperable solvents reported in the present application and thus the selection of solvents of present claim 1 is arbitrary and does not provide a technical teaching relating to effects unexpected in view of the prior art.

For these reasons, the Board concludes that it was obvious for the skilled person to try, following the teaching of document (1), mixtures of isopropanol and of methyl pentanediol isomers as required in present claim 1 in order to provide alternative concentrated softening compositions having the properties required by document (1).

Therefore, the simple selection of combinations of known solvents for achieving a result already known from the prior art cannot be considered to amount to an inventive step.

The subject-matter of claims 1 to 4 lacks thus an inventive step.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

G. Rauh

P. Krasa