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Datasheet for the decision of 24 November 2009

Case Number: T 0227/07 - 3.3.01

Application Number: 96924539.8

Publication Number: 0912098

IPC: A01N 65/00

Language of the proceedings: EN

Title of invention:
Use of a combination of surfactants, chelating agents and essential oils for effective disinfection

Patentee:
THE PROCTER & GAMBLE COMPANY

Opponent:
Henkel AG & Co. KGaA

Headword:
Disinfectants/PROCTER & GAMBLE

Relevant legal provisions:
EPC Art. 100(a), 54(3), 56

Relevant legal provisions (EPC 1973):
-

Keyword:
"Novelty (yes)"
"Inventive step (yes) - non obvious alternative"

Decisions cited:
-

Catchword:
-

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Case Number: T 0227/07 - 3.3.01

D E C I S I O N
of the Technical Board of Appeal 3.3.01
of 24 November 2009

Appellant: (Opponent)
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Decision under appeal: **Decision of the Opposition Division of the European Patent Office posted 13 December 2006 rejecting the opposition filed against European patent No. 0912098 pursuant to Article 102(2) EPC 1973.**

Composition of the Board:

Chairman: P. Ranguis
Members: C. M. Radke
D. S. Rogers

Summary of Facts and Submissions

I. The opponent appealed against the decision of the opposition division rejecting the opposition against European patent no. 0 912 098.

II. The opponent sought revocation of the patent in its entirety. The opposition was based on grounds under Article 100(a) EPC (lack of novelty and inventive step).

III. The following documents were *inter alia* cited during the opposition proceedings:

(D1) WO-A-97/31 093
(D2) WO-A-97/31 092
(D3) US-A-5 403 587
(D4) EP-A-0 467 618
(D7) CA-A-1 153 267

IV. The decision under appeal was based on the claims as granted, the only independent claim reading as follows:

"1. The use, in a composition, of a combination of a chelating agent, an amphoteric surfactant and an antimicrobial essential oil or an active thereof, to provide disinfecting properties to said composition, wherein the essential oil or active thereof is selected from the grap (*sic*) consisting of thyme oil, clove oil, cinnamon oil, geranium oil, eucalyptus oil, peppermint oil, mint oil or mixtures thereof, and thymol, eugenol, menthol, carvacrol, verbenone, eucalyptol, cedrol, anethol, pinocarvone, geraniol, hinokitiol, berberine, ferulic acid, cinnamic acid, methyl salycilic acid, methyl salycilate, terpineol and mixtures thereof, and

preferably is thymol, eugenol, verbenone, eucalyptol, terpineol, cinnamic acid, methyl salycilic acid and/or geraniol."

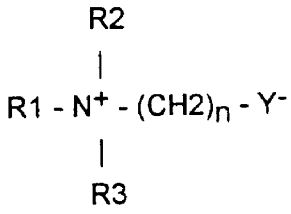
V. The opposition division deemed the subject-matter of the claims to be novel in view of any of the documents (D1) and (D2) as none of these disclosed the combination of the chelating agent with the specific essential oils listed in claim 1. Document (D3) was considered to represent the closest prior art for assessing inventive step. The objective problem to be solved was to provide compositions showing improved antimicrobial properties while having a limited detrimental impact on surfaces and being environmentally friendly. The comparative data provided with the letter dated 28 August 2000 and the examples in the patent in suit showed that this problem was solved. Document (D3) gave no incentive to use the chelating agent together with an amphoteric surfactant. The skilled person would not have arrived at the present invention by combining the teaching of document (D3) with that of (D4) or (D7) which both mention the presence of EDTA but do not suggest the use of amphoteric surfactants. Hence, the subject-matter of the claims involved an inventive step.

VI. The Board's decision is based on claims 1 to 5 of the Main Request, submitted during the oral proceedings of 24 November 2009 before the Board. The only independent claim of this request is claim 1. It differs from claim 1 as granted in that the chelating agent and the amphoteric surfactant are further specified (see point IV above). It reads as follows:

"1. The use, in a composition, of a combination of a chelating agent, an amphoteric surfactant and an antimicrobial essential oil or an active thereof, to provide disinfecting properties to said composition, wherein the essential oil or active thereof is selected from the group consisting of thyme oil, clove oil, cinnamon oil, geranium oil, eucalyptus oil, peppermint oil, mint oil or mixtures thereof, and thymol, eugenol, menthol, carvacrol, verbenone, eucalyptol, cedrol, anethol, pinocarvone, geraniol, hinokitiol, berberine, ferulic acid, cinnamic acid, methyl salicylic acid, methyl salicylate, terpineol and mixtures thereof, and preferably is thymol, eugenol, verbenone, eucalyptol, terpineol, cinnamic acid, methyl salicylic acid and/or geraniol,

wherein said chelating agent is etidronic acid, an alkali metal ethane 1-hydroxy diphosphonate, nitrilo trimethylene phosphonate, ethylene diamine tetra methylene phosphonate, diethylene triamine penta methylene phosphonate, dihydroxydisulfobenzene, ethylenediamine N,N'- disuccinic acid, diethylene triamine pentaacetate, N-hydroxyethylethylenediamine triacetate, nitrilotri-acetate, ethylenediamine tetraproprionate, triethylenetetraminehexa-acetate, ethanoldiglycine, propylene diamine tetracetic acid, methyl glycine di-acetic acid, malonic acid, salicylic acid, glycine, aspartic acid, glutamic acid, dipicolinic acid or a mixture thereof

and wherein said amphoteric surfactant or mixtures thereof, is a betaine or sulphobetaine surfactant, or derivatives thereof, or mixtures thereof according to the following formula:



wherein R1 is an alkyl radical containing from 1 to 24 carbon atoms, preferably from 8 to 18, and more preferably from 12 to 14, wherein R2 and R3 contain from 1 to 3 carbon atoms, and preferably 1 carbon atom, wherein n is an integer from 1 to 10, preferably from 1 to 6 and more preferably is 1, Y is selected from the group consisting of carboxyl and sulfonyl radicals and wherein the sum of R1, R2 and R3 radicals is from 14 to 24 carbon atoms and/or an amine oxide or mixtures thereof according to the formula $R_1R_2R_3NO$ wherein each of R1, R2 and R3 is independently a saturated substituted or unsubstituted, linear or branched alkyl group of from 1 to 30 carbon atoms, preferably of from 6 to 30 carbon atoms, more preferably of from 10 to 20 carbon atoms, and most preferably of from 8 to 18 carbon atoms."

VII. The Appellant's arguments which are relevant for the present set of claims may be summarised as follows: The subject-matter of claim 1 is not novel as all its features are disclosed

- in claims 1, 4, 9 and 14 and the description of document (D1) and
- in claims 1, 5, 7 and 12 and the description of document (D2).

In writing, the Appellant considered document (D3) as the closest prior art. The problem to be solved in view of document (D3) was to provide a composition having improved antibacterial properties, while not being

detrimental to the surfaces to be treated and being environmentally acceptable. No effect of the chelating agent was demonstrated. Moreover, the chelating agent tetrasodium salt of EDTA was mentioned as a corrosion inhibitor in document (D3). The combination of essential oils and a chelating agent was known from document (D4). Therefore, the addition of a chelating agent could not render the subject-matter of claim 1 inventive. The Appellant stated during the oral proceedings before the Board that it had no further arguments, beyond those it had submitted in writing, against the existence of an inventive step for the subject-matter claimed in the Main Request.

VIII. The arguments of the Respondent may be summarised as follows:

Neither (D1) nor (D2) exemplified compositions containing chelating agents. One had to select out of at least two lists disclosed in any of the documents (D1) and (D2) in order to yield the subject-matter of present claim 1. The chelating agent was not the only "preferred optional ingredient" mentioned in documents (D1) and (D2). The opposition division was right to acknowledge that none of these documents disclosed the combination of the three ingredients as defined in present claim 1.

Document (D3) represented the closest prior art. The objective problem was to provide compositions showing improved antimicrobial properties while having a limited detrimental impact on surfaces and being environmentally friendly. This problem had been solved as was evident from the comparative data filed on

28 August 2000 and from the patent in suit. However, the person skilled in the art would not have taken examples 15, 16 and 20 of document (D3) as the starting point for the invention, as the respective compositions were not covered by claim 1 of that document in that they contain 85 % of ethanol; the other examples did not contain an amphoteric surfactant.

Document (D3) alone could not render the subject-matter claimed obvious as in document (D3) only the essential oil was considered as being responsible for the disinfectant property.

Document (D3) in combination with document (D4) could not render the subject-matter claimed obvious as document (D4) attributed the positive effect to the synergism of the three mandatory components including a hydrotrope.

Document (D3) in combination with document (D7) could not render the subject-matter claimed obvious. The comparative examples submitted with the letter of 28 August 2000 showed a surprising effect in view of document (D3). In document (D3) there was no incentive to add the tetrasodium salt of EDTA (Na_4EDTA). Document (D7) describes EDTA or its derivatives merely as an optional ingredient without identifying its disinfecting properties. The chelating agents now listed in claim 1 no longer include Na_4EDTA and cannot be regarded as derivatives of EDTA.

IX. The Appellant requested that the decision under appeal be set aside and that the patent be revoked.

The Respondent requested that the decision under appeal be set aside and the patent be maintained in amended form based on claims 1-5 of the Main Request received during the oral proceedings of 24 November 2009. During said oral proceedings it abandoned its former main and auxiliary requests and its request not to admit the documents enclosed with Appellant's letter dated 19 April 2007 into the proceedings.

X. At the end of the oral proceedings the decision of the Board was announced.

Reasons for the Decision

1. The appeal is admissible.

2. *Article 123 EPC*

No objection under Article 123 EPC was raised on appeal, nor was the opposition based on grounds under Article 100(c) EPC.

Present claim 1 is based on claims 1, 6 and 7 as originally filed. Claims 2 to 5 have their basis in original claims 2 to 4 and 8, respectively.

The extent of protection of the claims as granted has been restricted by the features of granted claims 6 and 7.

Hence, the amendments in the claims do not contravene the requirements of Article 123 EPC.

3. *Novelty*

3.1 The Appellant considered the subject-matter of the present claims not to be novel in view of any of the documents (D1) and (D2).

The patent in suit was filed on 16 July 1996 without claiming a priority. The transitional provisions regarding the EPC 2000 determine that Article 54(3) EPC 2000 and Article 54(4) EPC 1973 apply to the patent in suit (see paragraphs 1 and 6 of Article 1 of the Decision of the Administrative Council of 28 June 2001 on the provisions under Article 7 of the Act revising the European Patent Convention of 29 November 2000, Special Edition No. 1 OJ EPO 2007, 197).

Each of the patent applications published as documents (D1) and (D2) was filed on 08 January 1997 and claims the priority of 23 February 1996. Therefore, documents (D1) and (D2) can be considered as prior art for all the contracting states designated in the patent in suit under Article 54(3) EPC 2000.

3.2 Claim 1 of the Main Request reads on to the use of a composition containing

- certain chelating agents,
- certain amphoteric surfactants, and
- certain essential oils or actives thereof

(see point VI above). Claims 2 to 5 are directed to preferred embodiments of claim 1.

When assessing novelty it is to be decided whether or not the use of the **combination** of these three

components is **directly and unambiguously** disclosed in any of the documents (D1) and (D2).

3.3 Documents (D1) and (D2) disclose the following features of present claim 1:

- ethylene diamine N,N'-disuccinic acid as one of those chelating agents in a claim, namely in claim 9 of (D1) and in claim 12 of (D2); the remaining chelating agents are disclosed in the description of each of these documents;
- the amphoteric surfactants (see claim 3 of document (D1) and claim 5 of document (D2); and
- several of the essential oils or actives thereof (see claim 4 of document (D1) and claim 7 of document (D2).

None of the examples in documents (D1) and (D2) contains all three components.

First of all it is questionable whether document (D1) directly and unambiguously discloses the combination of the features of dependent claims 3, 4 and 9 and document (D2) that of dependent claims 5, 7 and 12. All these claims refer to "any of the preceding claims" which clearly discloses the combination with one of the preceding claims but not necessarily a combination of one dependent claim with two other specific dependent preceding claims.

In addition, the person skilled in the art would have to

- make a selection among the essential oils or actives thereof listed in the respective claim of document (D1) or (D2), as these lists also mention

essential oils not to be used according to present claim 1 (namely lemongrass oil, citrus oil, lemon oil, orange oil, anise oil, aniseed oil, rose oil, lavender oil, camphor oil, sandalwood oil and cedar oil); and

- select ethylene diamine N,N'-disuccinic acid from the chelating agents listed in claim 9 of (D1) or in claim 12 of (D2), **or**
- select the chelating agents listed in present claim 1 from the description of document (D1) or (D2)(which also mentions other chelating agents, namely amino alkylene poly(alkylene phosphonates), hydroxypyridine dervatives and ethylene diamine tetraacetates; see, (D1), page 15, lines 9-10 and 21-32, and page 16, lines 16-17); (D2), page 16, lines 11-12, page 16, line 22 to page 17, line 2, page 17, lines 22-23)

in order to yield the subject-matter of the present claims.

Therefore, neither of the documents (D1) and (D2) directly and unambiguously discloses the subject-matter of the present claims.

3.4 The Appellant based its novelty objections only on documents (D1) and (D2). The Board is not aware of any other document of the prior art which discloses the subject-matter of the present claims. Hence, said subject-matter is considered to be novel.

4. *Inventive step*

4.1 The closest prior art

Documents (D1) and (D2) form part of the state of the art under Article 54(3) EPC and thus shall not be considered in deciding on inventive step (see Article 56 EPC).

Both parties considered document (D3) to represent the closest prior art for the assessment of inventive step.

As the patent in suit, document (D3) relates to antimicrobial compositions which can be used to disinfect and clean hard surfaces (see paragraph [0001] of the patent in suit and column 1, lines 5-10 of (D3))

Document (D3) discloses in antimicrobial compositions 15, 16, and 20 of examples 3 and 5 the use of

- thyme oil and
- lauryl dimethylamine oxide

in compositions to provide disinfectant properties (see also claims 1-4, 6 and 9).

Thyme oil is one of the essential oils listed in present claim 1 and lauryl dimethylamine oxide is an amine oxide of the formula $R_1R_2R_3NO$ depicted in said claim. Hence, the disclosure in these examples of document (D3) only differs from the subject-matter of present claim 1 in that the respective compositions do not contain a chelating agent as specified in present claim 1.

Hence, the Board is satisfied that document (D3) represents the closest prior art.

The Respondent argued that the person skilled in the art would not have taken samples 15, 16 and 20 of document (D3) as a starting point for the invention, as the respective compositions are not covered by claim 1 of that document in that they contain 85 % of ethanol.

However, also claim 9 of document (D3) relates to a composition containing thyme oil or lemongrass oil, lauryl dimethylamine oxide and about 85 weight percent of ethanol. There is no indication in the description of document (D3) that a high ethanol content is less preferred (see, e.g., column 3, lines 29-37). Therefore, samples 15, 16 and 20 of document (D3) are to be considered as preferred embodiments of the disclosure of document (D3) and thus as a proper starting point for the invention claimed in the patent in suit.

4.2 The problem to be solved

A problem to be solved was to provide the use of disinfecting compositions other than those disclosed in document (D3). It is evident from the examples of the patent in suit that this problem was solved.

Whether or not a more ambitious problem was solved need not be determined in view of the outcome of this decision.

4.3 The solution

4.3.1 Document (D3) mentions "tetra sodium ethylenediamine tetraacetate" (Na_4EDTA) as one of the corrosion inhibitors which may be added to the composition (see page 5, lines 10-13). Although Na_4EDTA is a chelating agent, it is not covered by the list of chelating agents in present claim 1. Nor is there any indication that the anticorrosive effect of Na_4EDTA could be due to its chelating property. Hence, document (D3) would not have led the person skilled in the art to replace Na_4EDTA by any of the chelating agents listed in present claim 1. Therefore, document (D3) alone cannot render the subject-matter of present claim 1 obvious.

4.3.2 Document (D4) relates to a disinfectant cleaner comprising pine oil, a chelating agent, and a hydrotrope such as sodium xylene sulfonate (see claims 1 and 4). The achieved broadening of the spectrum of disinfectancy is attributed to the synergy of these three components (see page 3, lines 29-38 and TABLE II on page 4). As the only chelating agent mentioned in document (D4) is Na_4EDTA - which is not one of the chelating agents listed in present claim 1 - the combined teaching of documents (D3) and (D4) would not have led the person skilled in the art to the subject-matter of present claim 1. Moreover, document (D4) discourages the person skilled in the art from using quaternary compounds whereas the amphoteric surfactants to be used in present claim 1 are quaternary (see (D4), page 2, lines 7-10). Therefore, the combined teaching of documents (D3) and (D4) cannot render the subject-matter of present claim 1 obvious.

4.3.3 Document (D7) discloses that "ethylene diamine tetraacetic acid (EDTA) or a derivative thereof" further enhances the germicidal activity of the disinfectant composition containing alpha terpineol. This was believed to be due to the action of EDTA upon the cell wall of the gram negative organisms in such a way that it is more easily penetrated by the active ingredients (see claim 1 and page 4, lines 15-22).

Both parties were of the opinion that the feature "ethylene diamine tetraacetic acid (EDTA) or a derivative thereof" did not comprise any of the chelating agents listed in present claim 1, but that said feature only read on EDTA and its salts (such as the Na_4EDTA disclosed in documents (D3) and (D4)). As the functional groups of EDTA are the four -COOH groups, the person skilled in the art would consider only those compounds as derivatives of EDTA which result from the reaction of EDTA at at least one of these -COOH groups, such as the salts of EDTA. This clearly excludes any of the chelating agents listed in present claim 1. Moreover, it is to be noted that document (D7) does not clearly link the effect of EDTA or its derivatives to their chelating effect, namely their ability to form a certain type of coordination complexes with metals. Therefore, the person skilled in the art would not have been inclined to replace in document (D7) EDTA or its derivatives by any chelating agent mentioned in present claim 1.

Therefore, the combined teaching of documents (D3) and (D7) can also not render the subject-matter of present claim 1 obvious.

4.3.4 For these reasons, the subject-matter of claim 1 is based on an inventive step. The same applies to the subject-matter of dependent claims 2-5 which relate to preferred embodiments of claim 1.

5. *Adapted description*

The Respondent did not object to the description as adapted by the Appellant during the oral proceedings before the Board. The Board is satisfied that the respective amendments merely adapt the description to the amended claims.

6. No other objection was raised by the Appellant during the appeal proceedings. Nor is the Board aware of any deficiencies of the patent in suit which could justify the revocation of the patent in suit amended according to the Main Request. For these reasons, the present claims and the description adapted thereto meet the requirements of the EPC.

7. *Remittal to the department of first instance (Article 111 (1) EPC)*

In the present case, the Board cannot decide on the maintenance of the patent as amended because the prerequisites according to Rule 82(2) EPC, second sentence, are not yet fulfilled. Therefore, it remits the case to the department of first instance.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.

2. The case is remitted to the department of first instance with the order to maintain the patent as amended in the following version:

   Description: Pages 2 to 7 received during the oral proceedings of 24 November 2009.

   Claims: No. 1 to 5 received during the oral proceedings of 24 November 2009.

The Registrar: The Chairman:

M. Schalow P. Ranguis