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D E C I S I O N
of 23 September 2003

Case Number: T 0944/02 - 3.3.6

Application Number: 95942584.4

Publication Number: 0797657

IPC: C11D 17/00

Language of the proceedings: EN

Title of invention:

Microemulsion light duty liquid cleaning compositions

Applicant:

Colgate-Palmolive Company

Opponent:

-

Headword:

Betaine/COLGATE-PALMOLIVE

Relevant legal provisions:

EPC Art. 56

Keyword:

"Inventive step (main and auxiliary request: no)"

Decisions cited:

-

Catchword:

-



Case Number: T 0944/02 - 3.3.6

D E C I S I O N
of the Technical Board of Appeal 3.3.6
of 23 September 2003

Appellant: Colgate-Palmolive Company
300 Park Avenue
New York, N.Y. 10022-7499 (US)

Representative: Smulders, Theodorus A.H.J., Ir.
Vereenigde
Postbus 87930
NL-2508 DH Den Haag (NL)

Decision under appeal: Decision of the Examining Division of the
European Patent Office posted 13 March 2002
refusing European application No. 95942584.4
pursuant to Article 97(1) EPC.

Composition of the Board:

Chairman: P. Krasa
Members: G. N. C. Raths
U. J. Tronser

Summary of Facts and Submissions

I. This appeal is from the Examining Division refusing European patent application No. 95 942 584.4 concerning microemulsion light duty liquid cleaning compositions.

During the examination procedure, *inter alia*, the following documents were cited:

- (1) US-A-5 082 584;
- (2) US-A-4 146 499;
- (3) J.Falbe, "Surfactants in Consumer Products, Theory, Technology and Application", Springer Verlag Heidelberg, 1987; and
- (4) G.Jakobi and A.Löhr, "Detergents and Textile Washing, Principles and Practice", VCH, 1987.

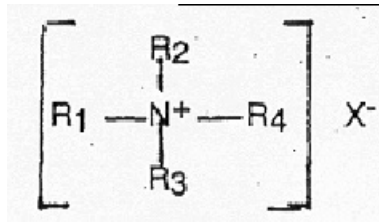
The Examining Division held the subject-matter of the claims according to a main and an auxiliary request to be novel but not to involve an inventive step, in view of document (1) in combination with documents (2) to (4).

II. The appellant (applicant) lodged an appeal against this decision.

Claim 1 of the main request reads as follows:

"1. A clear high foaming, microemulsion light duty liquid cleaning composition which comprises by weight:

- (a) 14% to 24% of an alkali metal salt of a C₁₀₋₂₀ paraffin mono- or disulfonate wherein the alkali metal is sodium or potassium;
- (b) 2% to 6% of a metal or ammonium salt of a C₈₋₁₈ ethoxylated alkyl ether sulfate;
- (c) 2% to 8% of a zwitterionic surfactant having the formula:



wherein X is SO₃⁻ or CO₂⁻, R₁ is a C₁₀-C₂₀ alkyl group or a R-CO-NH-(CH₂)_a group, wherein R is a C₉-C₁₉ alkyl group and a is an integer 1 to 4, R₂ and R₃ are each C₁-C₃ alkyl groups and R₄ is a C₁-C₄ alkylene or hydroxy alkylene group;

- (d) 4% to 12% of a nonionic surfactant;
- (e) 1% to 10% of at least one solubilizing agent wherein said solubilizing agent is a C₂₋₄ mono- or dihydroxy alkanol;
- (f) 1% to 14% of a cosurfactant wherein said cosurfactant is selected from the group consisting of polyethylene glycol having a molecular weight of 300 to 1000, polypropylene glycol of the formula HO(CH₂CHCH₂O)_n.H, wherein n is 2 to 18, mixtures of polyethylene glycol and polypropylene glycol, mono C₁-C₆ alkyl ethers and esters of ethylene glycol en propylene glycol having the formulas of R(X)_nOH and R₁(X)_nOH wherein R is a C₁₋₆ alkyl group, R₁ is a C₂₋₄ acyl group, X is (OCH₂CH₂) or (OCH₂CHCH₃) and n is from 1 to 4;

- (g) 0,5% to 10% of urea;
 - (h) 1% to 8% of a C₈-C₁₈ water insoluble hydrocarbon;
- and
- (i) the balance being water, said composition does not contain HEDTA, amine oxide, fatty acid alkanolamides, abrasives, silicas, alkaline earth metal carbonates, alkyl glycine surfactant, cyclic imidinium surfactant, alkali metal carbonates or more than 3 wt% of a fatty acid or its salt thereof."

Claim 1 of the auxiliary request differs from Claim 1 of the main request in that the passage "having a pH in the range of 5 to 8" was inserted between "cleaning composition" and "which comprises".

- III. In reply to a communication issued by the Board on 21 October 2002, the appellant confirmed its request for oral proceedings, which took place on 23 September 2003.

- IV. The appellant requested that the decision under appeal be set aside and that a patent be granted on the basis of the following requests: Claims 1 to 6 of the main request or auxiliary request (annex 2 or 3 to the decision under appeal).

- V. At the end of the oral proceedings the Chairman announced the decision of the Board.

Reasons for the Decision

1. *Articles 84, 83 and 123 (2) EPC. Novelty.*

1.1 Main and auxiliary request

Whereas the Board noted some editorial errors in the claims, the Board is satisfied that the claims satisfy the requirements of Articles 84 and 123(2) EPC and that their subject-matter is novel.

2. *Inventive step*

2.1 Main request

2.1.1 The objective of the invention addressed in the application in suit was to provide light duty liquid cleaning compositions which impart mildness to the skin and which are in the form of a microemulsion designed in particular for cleaning hard surfaces and which are effective in removing grease soil and/or bath soil and in leaving unrinsed surfaces with a shiny appearance (page 1, lines 4 to 7). High foaming properties were also desirable (page 7, line 4).

In the grounds of appeal the appellant maintained the objectives of mildness to the skin and high foaming and cleaning properties (page 7, lines 3 to 5; page 12, lines 14 to 17), but put more emphasis on the stability of these compositions *per se* and on the stability of the foam generated by these compositions (letter dated 2 July 2002, page 5, lines 16 to 20).

2.1.2 Document (1) relates to clear liquid cleaning compositions in the form of microemulsions. These compositions are suitable for cleaning hard surfaces having a shiny finish and show good grease soil removal properties when used in undiluted (neat) form. They leave the cleaned surfaces shiny without the need of, or requiring only minimal, additional rinsing or wiping (column 3, lines 14 to 22).

In one aspect, document (1) provides a stable clear all-purpose, hard surface cleaning composition (see e.g. claims 1 and 2).

Thus document (1) addresses an objective similar to that of the application in suit. Therefore, the Board takes document (1) as the starting point for evaluating inventive step.

2.1.3 The compositions according to the application in suit differ, in essence, from those according to document (1) in that they contain betaine, which is not disclosed by document (1).

In the light of document (1), the technical problem underlying the patent in suit was to stabilise the clear liquid cleaning compositions in the form of a microemulsion.

2.1.4 The tables regarding the results obtained with the examples according to the application in suit display characteristics such as appearance, Brookfield viscosity, flash point, olive oil emulsification speed and suds titration (application in suit, pages 17 to 20). A general statement regarding stability reads

as follows: "In final form, the instant compositions exhibit stability at reduced and increased temperatures. More specifically, such compositions remain clear and stable in the range of 5°C to 50°C, especially 10°C to 43°C." (page 17, lines 1 to 3).

Further, the comparative test results submitted under cover of the letter dated 2 July 2002 confirm that compositions containing betaine have a good appearance at 25°C and at 4°C and compositions in which betaine is missing display unsatisfactory appearance at 4°C in three cases and at 25°C in two cases; at a higher concentration of DPM (8.4 instead of 6) and in the absence of betaine, the appearance at 25°C is satisfactory too, but not at 4°C, DPM being the abbreviation for dipropylene glycolmonomethyl ether, a most preferred cosurfactant (application in suit, page 16, lines 6 and 7).

Therefore, the Board is satisfied that the problem as stated under point 2.1.2 has been credibly solved.

- 2.1.5 The question remains to be decided whether the claimed solution to this technical problem involves an inventive step.

- 2.1.6 The appellant argued, in essence, that the stability of the claimed compositions, a third advantageous property (apart from mildness and the foaming capacity), was due to their betaine content. This could not be inferred from documents (3) and (4) (letter of 28 April 2003, page 1, lines 7 to 10).

In particular, betaine in combination of the solubilizing agent which is a C₂ to C₄ mono- or dihydroxy alkanol (component (e)) and a cosurfactant in amount of 1 to 14%, selected from polyethylene glycols (component (f)) would provide the liquid cleaning composition with good stability properties.

Further, the compositions according to document (1) contain (a soap of) a fatty acid to improve rinsability (see claim 1, column 19, line 25) whereas the compositions according to the application in suit do not.

The appellant concluded therefrom that the claimed composition involved an inventive step.

2.1.7 The Board does not agree to this reasoning.

Document (3) discloses, *inter alia*, the following basic properties of amphoteric surfactants, among which were also listed the betaines (page 115, paragraph 3.2.4.1):

- compatibility with anionic, cationic and nonionic surfactants,
- good compatibility with skin and mucous membranes, especially with anionic surfactants,
- good cleaning power for hard surfaces and textiles (page 118, chapter 3.2.4.3, lines 1 to 9).

Document (1) taught microemulsion all purpose liquid cleaning compositions which were designed for cleaning

hard surfaces. Said compositions contained anionic surfactants (see e.g. claim 1).

One objective of the patent application in suit was to provide a detergent which is mild to the human skin (page 7, lines 3 to 5). Since according to document (3) amphoteric surfactants e.g. betaines have, in addition to good cleaning power for hard surfaces, good compatibility with skin and mucous membranes and with anionic surfactants (page 118, paragraph 3.2.4.3, lines 1 to 10), there was an incentive to try with a reasonable expectation of success whether the addition of these amphoteric surfactants would impart such mildness to the skin also to the compositions disclosed in document (1).

Further, since the detergent, the skilled person was looking for, should have high foaming properties (page 7, lines 3 to 5), it was obvious to try betaines also for that reason, since they were known as foam boosters (document (4), page 92, lines 18 and 19).

Whereas documents (3) and (4) disclose the above mentioned two properties of betaines, they do not mention that betaine would render the compositions stable. During the appeal procedure more weight was put on this additional property i.e. stability. However, the achievement of the main objectives, namely mildness to skin and good foaming properties, was already sufficient incentive for the notional skilled person to add betaines to the compositions known from document (1).

The presence of the third property, namely stability of the thereby resulting compositions then fell automatically into the skilled person's lap and did not require any inventive activity.

The appellant further submitted that the combination of C₂ to C₄ mono- or dihydroxy alkanols used as a solubilizing agent and polypropylene glycols used as a cosurfactant (application in suit, Claim 1, (d) and (e)) was not rendered obvious by the state of the art. However, the Board cannot accept this line of argumentation for the following reasons: document (1) discloses four major classes of compounds as suitable cosurfactants, among which C₃ to C₄ alkanols and propylene glycols are designated (column 9, lines 59 to 62). Hence, the combination of alkanols and polyethylene glycols was already known. The label "solubilizing agent" according to the application in suit does not help to make a distinction with respect to a "cosurfactant" according to document (1), if alkanols fulfil both the definition of a solubilizing agent and a cosurfactant.

The Board notes that the liquid cleaning composition according to Claim 1 of the application in suit may also contain up to 3 wt% of fatty acid or its salt.

According to Claim 1 of document (1) the stable microemulsion comprises a C₈ to C₂₂ (soap of a) fatty acid (column 19, line 25). In particular, it is allowed to include minor amounts, i.e. from 0.1 to 2.0%, preferably from 0.25% to 1.0% by weight of the composition of a C₈ to C₂₂ fatty acid or fatty acid soap as a foam suppressant. The addition of fatty acid or

fatty acid soap provides an improvement in the rinsability. Generally however, it is necessary to increase the level of cosurfactant to maintain product stability when the fatty acid or soap is present (column 13, lines 7 to 16).

Therefore, the Board cannot see any difference in this respect which could support the existence of an inventive step.

2.1.8 The subject-matter of Claim 1 does not involve an inventive step and, therefore, the main request fails.

2.2 Auxiliary request

The appellant argued that the indication of the pH of between 5 and 8 "brings the claimed subject-matter even further away from document (1)" (letter dated 2 July 2002, page 5, last paragraph).

Apart from the feature regarding the pH, the reasoning under points 2.1 to 2.1.7 applies *mutatis mutandis* to the subject-matter of Claim 1 of the auxiliary request.

As far as the pH is concerned, the Board draws the attention to the following passage of document (1) (see also the Board's communication dated 21 October 2002):

"For example, microemulsion compositions which have a pH in the range of 1 to 10 may employ either the class 1 or the class 4 cosurfactant as the sole surfactant, but the pH range is reduced to 1 to 8.5 when the polyvalent metal salt is present. On the other hand, the class 2 cosurfactant can only be used as the

sole cosurfactant where the product pH is below 3.2. Similarly, the class 3 cosurfactant can be used as the sole surfactant where the product pH is below 5. However, where the acidic cosurfactants are employed in admixture with a glycol ether cosurfactant, compositions can be formulated at a substantially neutral pH (e.g. pH 7 ± 1.5 , preferably 7 ± 0.2)."(column 11, lines 3 to 15).

In the light of this guidance provided for in document (1), the pH adjustment between 5 and 8 does not contribute an inventive step. Claim 1 does not meet the requirements of Article 56 EPC.

The auxiliary request fails.

Order

For these reasons it is decided that:

The appeal is dismissed.

The Registrar:

The Chairman:

G. Rauh

P. Krasa