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**D E C I S I O N**  
**of 10 February 2003**

**Case Number:** T 0501/99 - 3.3.6

**Application Number:** 90202510.5

**Publication Number:** 0418986

**IPC:** C11D 17/00

**Language of the proceedings:** EN

**Title of invention:**

Process for absorbing a lipophilic soil from a surface into a liquid crystal detergent composition

**Patentee:**

Colgate-Palmolive Company

**Opponent:**

Henkel Kommanditgesellschaft auf Aktien  
UNILEVER N.V.

**Headword:**

Lipophilic soil/COLGATE

**Relevant legal provisions:**

EPC Art. 83

**Keyword:**

"Sufficiency of disclosure (no) - no teaching enabling the skilled person to verify without needing inventive skill if the conversion to a microemulsion required by the claimed process takes place"

**Decisions cited:**

T 0639/95, T 0226/85

**Catchword:**

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Case Number: T 0501/99 - 3.3.6

**D E C I S I O N**  
**of the Technical Board of Appeal 3.3.6**  
**of 10 February 2003**

**Appellant:** Colgate-Palmolive Company  
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**Decision under appeal:** Decision of the Opposition Division of the  
European Patent Office posted 26 March 1999  
revoking European patent No. 0 418 986 pursuant  
to Article 102(1) EPC.

**Composition of the Board:**

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

## Summary of Facts and Submissions

- I. The present appeal is from the decision of the Opposition Division to revoke the European patent No. 0 418 986, concerning a process for absorbing a lipophilic soil from a surface.
- II. In their notices of opposition the Respondents 01 and 02 (Opponents 01 and 02) sought revocation of the patent inter alia on the grounds of Article 100(b) EPC.
- III. In its decision, the Opposition Division found that the claims according to the Appellant's (Patent Proprietor's) then pending main request, first and second auxiliary requests did not comply with the requirements of the EPC.

Claim 1 of the main request read as follows:

"1. A process for absorbing a lipophilic soil from a hard surface into a liquid crystal detergent composition and converting such liquid crystal detergent composition to a thinner microemulsion which comprises applying the liquid crystal detergent composition to the lipophilic soil on the surface, whereby the soil is absorbed into the detergent composition and the composition is converted to a microemulsion, which is of lower viscosity than the liquid crystal composition and is readily removable from the surface."

This claim differed from claim 1 as granted only insofar as it contained the additional word "**hard**" between "lipophilic soil from a" and "surface into".

Claim 1 of the first auxiliary request differed from that of the main request insofar as it specified that the **"liquid crystal detergent composition comprises a nonionic detergent which is accompanied by either an anionic or a cationic surfactant in amounts less than that of the nonionic detergent"**.

Claim 1 of the second auxiliary request differed from that of the main request insofar as it did not contain the word **"hard"** but specified that the **"liquid crystal composition consists essentially of by weight: 5 to 40% of surface active agent, which is a mixture of nonionic and anionic detergents wherein the anionic detergent is an aliphatic alcohol ester of a sulfosuccinic acid salt; 0.5 to 20% of a cosurfactant of the formula  $RO(X)_nH$  or  $R'O(X)_nH$  wherein R is a  $C_{1-5}$  alkyl, R' is a  $C_{2-4}$  acyl; X is  $CH_2CH_2O$  or  $CH(CH_3)CH_2O$  and n is from 1 to 5; 1 to 20% of lipophilic solvent; and 40 to 90% of water"**.

All requests contained dependent claims relating to particular embodiments of the claimed process.

The opposition division found in particular that

- according to the teaching of the patent in suit a skilled person could have found liquid crystal detergent compositions able to undergo the required conversion to a microemulsion by drawing a ternary phase diagram as explained in the description of the patent;
- however, the skilled person, after having drawn such a phase diagram, had still to analyse the type and quantity of soil to be removed and to

verify if the chosen liquid crystal composition lied in an area of the phase diagram from which one would expect that it could convert to a microemulsion under the chosen use conditions;

- a phase diagram had thus to be drawn for any given composition and for any type of lipophilic soil to be removed;
- the teaching of the patent in suit therefore did not give sufficient information for carrying out the claimed invention in its whole extent without undue burden and the invention as claimed in accordance with the main request or in accordance with the first and second auxiliary requests contravened the requirements of Article 83 EPC.

IV. An appeal was filed against this decision.

The Appellant submitted in writing and in the oral proceedings held before the Board on 10 February 2002 that:

- the claims were not directed to liquid crystal detergent compositions as such but to a process wherein the used liquid crystal detergent composition had to be able to undergo a conversion to an oil-in-water microemulsion by absorbing a lipophilic soil; therefore, the patent did not need to contain all the information necessary for preparing such liquid crystal compositions;
- moreover, the patent in suit showed at least one way for carrying out the claimed process and other suitable compositions could be easily found by the

skilled person by drawing a ternary phase diagram as taught in the patent in suit and selecting those compositions lying in an area of the phase diagram from which one would expect that they could convert to a microemulsion;

- moreover, since the resulting microemulsion was less viscous than the starting liquid crystal detergent composition, the skilled person could easily verify if the required conversion to a microemulsion had taken place by testing the obtained thinner product.

V. The Respondents argued in writing and in the oral proceedings that:

- the patent in suit did not contain any general teaching for selecting a suitable liquid crystalline detergent composition and obliged the skilled person to draw a phase diagram for any used composition;
- this fact was evidenced by Figure 1 of the patent in suit showing that the area of existence of an oil-in-water microemulsion was very narrow and that the conversion of a liquid crystal detergent composition to a microemulsion by absorbing an oily material was not always possible and depended from the amount of oily material absorbed; moreover, a comparison of the phase diagram of Figure 1 with that of Figure 2 showed that a slight structural change in one of the surfactant components brought about a drastic change of the phase diagram;

- the interpretation of such phase diagrams was further complicated by the possible use of additional components and by the fact that the lipophilic soil was not identical to the hydrophobic solvent contained in the composition; all these variables affected in an unpredictable way the phase diagram;
- moreover, the description of the patent in suit did not teach how the skilled person could verify that the required conversion to a microemulsion had taken place;
- the skilled person had thus to find new methods of investigation which would enable him to find in a reliable way suitable liquid crystal detergent compositions; this was, however, equivalent to the set up of a search program;
- therefore, the patent in suit did not contain a teaching that would directly lead the skilled person to select without undue burden or the use of inventive skill a composition suitable for performing the claimed process.

VI. During the oral proceedings held before the Board the Appellant, following the discussion about Article 123(2) EPC, amended claim 1 of the second auxiliary request by specifying further the used liquid crystal composition by the following wording: **"the proportion of anionic detergents being within the range of 2 to 25% of the amount of nonionic detergent present"**.

VII. The Appellant requests that the decision of the first



instance be set aside and the case be remitted to the first instance for further prosecution on the basis of the main request or alternatively on the basis of the first auxiliary request, both as attached to the decision of the opposition division, or on the basis of the second auxiliary request filed during oral proceedings before the Board.

The Respondents request that the appeal be dismissed.

VIII. At the end of the oral proceedings, the chairman announced the decision of the Board.

### **Reasons for the Decision**

#### 1. *Main request*

1.1 Claim 1 of this request is directed to a process which requires the essential steps of applying a liquid crystal detergent composition to a lipophilic soil on a hard surface, absorbing the lipophilic soil into the liquid crystal composition and therewith converting the latter to a microemulsion which is of lower viscosity than the liquid crystal composition and is readily removable from the surface.

1.2 According to the established jurisprudence of the Boards of Appeal of the EPO a European patent complies with the requirements of Article 83 EPC if a skilled person, on the basis of the description of the respective patent and of the common general knowledge, is able to carry out the claimed invention in its whole extent without undue burden and without needing inventive skill. In this respect also a reasonable

amount of trial and error is permissible, provided that the specification contains adequate instructions or the common general knowledge would lead the skilled person necessarily and directly towards success through the evaluation of initial failures or through an acceptable statistical expectation rate in case of random experiments (see, for example, T 639/95, point 1 of the reasons for the decision, unpublished in the OJ EPO, and T 226/85, OJ EPO 1988, 336, point 8 of the reasons for the decision).

In the present case, it has thus to be evaluated if the claimed invention is disclosed in the patent in such a manner that a skilled person, making use of his common general knowledge, would have found suitable liquid crystal detergent compositions undergoing the required phase transition to a microemulsion, which in the present case is an oil-in-water microemulsion as explained in the patent (page 5, lines 43 to 44), and could have verified that this conversion has taken place without undue burden and without needing inventive skill.

- 1.3 The description of the patent in suit specifies the various components which can be used in the liquid crystal compositions of the invention (see e.g. page 3, line 15 to page 5, line 30) and which are the preferred compositions (page 6, lines 28 to 38); the Examples 1 and 3 on pages 8 to 10 show moreover at least one way for carrying out the invention.

As explained in the patent in suit the required conversion of a liquid crystal composition to a microemulsion occurs spontaneously at the interface between the liquid crystal detergent composition and

the lipophilic soil or after the addition of some water (see page 7, lines 19 to 21; page 3, lines 13 to 14 and page 8, lines 13 to 16).

However, as agreed by all parties in the oral proceedings, not every liquid crystal detergent composition would undergo a phase transition to a microemulsion by absorbing a lipophilic soil and this conversion depends inter alia from the concentration of the various components of the composition as well as from the amount of soil absorbed.

According to the patent in suit the notional skilled person, being in this case a person routinely entrusted with and having experience in the preparation of liquid crystal detergent compositions, can find compositions which undergo the required conversion to a microemulsion by drawing a ternary phase diagram having as the three variables the amounts of, respectively, the surfactant-cosurfactant system, water and the lipophilic solvent and selecting, in view of such phase diagram, the combination of components belonging to the liquid crystal area which could be expected to be converted into a microemulsion and not into a different thinner phase upon absorption of a lipophilic soil (see page 7, lines 14 to 28 and page 6, lines 53 to 56).

- 1.4 The Board agrees that the drawing of such a phase diagram was an operation well known to the skilled person and could be carried out without need of inventive skill.

However, as shown in Figures 1 and 2 of the patent in suit, the area of existence of an oil-in-water microemulsion is very narrow and lies between the

liquid crystal phase area and the large area including other thinner phases such as macroemulsion and micellar phases (see Figure 1 in combination with page 6, lines 50 to 52 and Figure 2 in combination with page 7, lines 6 to 11 of the patent in suit). This means that the liquid crystal composition can also be easily converted to another different thinner phase if too much soil is absorbed. Moreover, even a small variation in a given composition affects dramatically the phase diagram, as shown by the comparison of Figures 1 and 2 relating to compositions differing from each other only insofar as that of Figure 1 contains a **tripropylene** glycol n-butyl ether as cosolvent and that of Figure 2 a **dipropylene** glycol n-butyl ether (see page 8, lines 48 to 49 and 54 to 57).

Therefore, it is the Board's finding that the presence in a given liquid crystal detergent composition of additional components not reported in such a phase diagram, as envisaged in the patent in suit (page 5, lines 31 to 39) or the absorption of a lipophilic soil not identical to the lipophilic solvent of the composition would alter in an unpredictable way the phase diagram drawn on the basis of only the surfactants, cosurfactant, lipophilic solvent and water of the given composition.

The Board concludes that the drawing of a phase diagram as taught in the patent in suit does not permit to identify with certainty if a given composition would effectively convert to a microemulsion in a process as claimed and not, for example, to another different thinner phase such as a macroemulsion or a micellar phase.

The patent, moreover, does not teach either how to modify a given liquid crystal composition which is not able to give the required phase conversion in order to perform the claimed invention.

- 1.5 Another point to be evaluated in the present case is whether the skilled person could verify without undue burden and without needing inventive skill that the required phase conversion has taken place.

As taught in the patent, the formation of a microemulsion is allegedly indicated by a thinning of the originally viscous composition, for example by the fact that part of the composition sticking originally to the wall to be cleaned starts running down (see page 8, lines 21 to 22; page 9, lines 57 to 58).

However, as explained hereinabove in point 1.4, the phase conversion obtained by absorption of the lipophilic soil can equally proceed to thinner phases different from microemulsions. Such phases, e.g. macroemulsions or micellar phases, which also have a reduced viscosity, would therefore on formation also start running down the wall.

Thus, this behaviour is not apt to distinguish a microemulsion from other thinner phases.

Therefore, the skilled person, in order to be able to carry out the claimed process in a reliable way, must have another possibility of verifying if such a microemulsion has been obtained.

The Appellant, in the oral proceedings, submitted that this could be done by testing the obtained thinner

product and the Board accepts that a skilled person, in principle, was able to analyse a given liquid composition as to its phases.

However, the claimed method is not limited to the cleaning of walls or other vertical surfaces in which case the converted phase would start running down, as explained above, but reads also on the cleaning of not vertical surfaces, e.g. a floor.

Since the required conversion occurs at the interface between the liquid crystal composition and the lipophilic soil (see point 1.3 above), only a part of the viscous composition will undergo such a conversion; therefore, situations could arise in a process applied to not vertical surfaces where the partially liquefied composition still remain covered by the original viscous crystal composition and does not separate out from the rest of the soil and of the original viscous composition.

Since the patent in suit does not give any indication how the skilled person could reliably verify by testing the occurring of the required phase transformation, a suitable testing method for verifying if the claimed process has actually occurred in any type of application has thus first to be found.

- 1.6 The Board concludes that the patent in suit, for the reasons put forward in points 1.4 and 1.5 above, does not contain sufficient information or technical teaching enabling the skilled person, in combination with his common general knowledge, to perform the claimed invention in its whole scope in a reliable way without undue burden and without needing inventive

skill.

Therefore the claimed invention does not comply with the requirements of Article 83 EPC.

2. *First and second auxiliary request*

Even though the claims of these requests further specify the liquid crystal detergent composition which can undergo the required conversion to a microemulsion (see points III and VI above), they do not contain any feature which could remove the insufficiency found in the use of a ternary phase diagram as suggested in the patent in suit or in the necessary verification of the occurring phase conversion, as explained in points 1.4 and 1.5 above.

Consequently, the arguments put forward in points 1.4 to 1.6 above apply *mutatis mutandis* to these requests.

3. For these reasons the Board concludes that the patent in suit does not comply with the requirements of Article 83 EPC.

**Order**

**For these reasons it is decided that:**

The appeal is dismissed.

The Registrar:

The Chairman:

G. Rauh

P. Krasa