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**Datasheet for the decision
of 26 October 2006**

Case Number: T 0368/01 - 3.3.07

Application Number: 94921899.4

Publication Number: 0706366

IPC: A61K 7/06

Language of the proceedings: EN

Title of invention:

Conditioning shampoos containing polyvalent metal cations

Patentee:

THE PROCTER & GAMBLE COMPANY

Opponents:

- 01: L'OREAL
02: KPSS-Kao Professional Salon Services GmbH
03: Henkel KG a. A.

Headword:

-

Relevant legal provisions:

EPC Art. 54, 56, 114(2)

Keyword:

"Novelty - yes"
"Inventive step (no) - problem and solution - obvious
solution"
"Late filed tests - not admitted"

Decisions cited:

T 0219/83

Catchword:

-



Case Number: T 0368/01 - 3.3.07

DECISION
of the Technical Board of Appeal 3.3.07
of 26 October 2006

Appellant 01:
(Opponent 01)

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Appellant 02:
(Opponent 03)

Henkel
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Representative:

-

Respondent:
(Patent proprietor)

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Party as of right:
(Opponent 02)

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Decision under appeal:

**Interlocutory decision of the Opposition
Division of the European Patent Office posted
12 March 2001 concerning maintenance of
European patent No. 0706366 in amended form.**

Composition of the Board:

Chairman: S. Perryman
Members: B. Struif
B. ter Laan

Summary of Facts and Submissions

I. The mention of the grant of European patent No. 0 706 366 with respect to European patent application No. 94 921 899.4, filed as international application No. PCT/US94/05008 on 5 May 1994 and claiming a priority of US 85695 of 30 June 1993, was published on 29 July 1998. The granted patent was based on 10 claims. Independent claims 1 and 10 read as follows:

"1. A hair conditioning shampoo composition characterized in that it comprises:

(a) a deterative surfactant, or mixture thereof, selected from the group consisting of anionic, nonionic, amphoteric, and zwitterionic surfactants;

(b) a nonvolatile hair conditioning agent selected from the group consisting of water soluble cationic conditioning agents and insoluble silicone conditioning agents;

(c) from 20% to 99.5%, by weight, of water;

wherein said composition further comprises from 0.004M to 0.08M of polyvalent metal cations in free ion form and wherein the silicone hair conditioning agent is insoluble in the composition and has an average particle size of from 0.5 to 20 microns."

"10. A method for making a hair conditioning shampoo composition comprising:

(a) a deterative surfactant, or mixture thereof, selected from the group consisting of anionic, nonionic, amphoteric, and zwitterionic surfactants;

(b) a nonvolatile hair conditioning agent selected from the group consisting of water soluble cationic conditioning agents and insoluble silicone conditioning agents and wherein the silicone hair conditioning agent is insoluble in the composition and has an average particle size of from 0.5 to 20 microns;

(c) from 20% to 99.5%, by weight, of water;
wherein the improvement comprises adjusting the level of polyvalent metal cation in free ion form to within the range of from 0.004M to 0.08M."

II. Three notices of opposition were filed against the granted patent, in which opponents 01 and 03 requested the revocation of the patent in its entirety on the grounds of insufficient disclosure (Article 83 EPC), lack of novelty (Article 54 EPC) and lack of an inventive step (Article 56 EPC). Opponent 02 requested the revocation of the patent in its entirety on the grounds of lack of novelty (Article 54 EPC) and lack of an inventive step (Article 56 EPC). The opposition was supported *inter alia* by the following documents:

D1: FR-B-2 562 794

D9: Cosmetics & Toiletries, vol. 106 (April 1991),
p.90: "Gentle Shampoo"

D12: WO-A-92/10162

D15: Kirk Othmer: Encyclopedia of Chemical Technology,
3rd ed., vol. 21 (1983), pages 106-131, "Size
measurement of Particles"

D17: DE-B-27 27 255

III. In an interlocutory decision posted on 12 March 2001, the opposition division found that the patent could be maintained in amended form based on a set of claims 1 to 8 submitted with letter dated 10 April 2000 as the main request. Claims 1 and 8 as amended differed from granted claims 1 and 10, respectively, in that the nonvolatile hair conditioning agent according to feature b) was specified as follows:

- "b) a nonvolatile hair conditioning agent comprising an insoluble silicone conditioning agent and a water soluble cationic conditioning agent...".

Furthermore in claim 1, feature (c) the term "99.5 by weight" was replaced by the term "99.9% by weight".

IV. The opposition division held that:

- (a) The amendments to the claims of the main request were in compliance with the requirements of Article 123(2) and (3) EPC.
- (b) As regards sufficiency of disclosure, the opponents had not provided any evidence that when applying various methods for the determination of the average particle size of the silicone, each method would yield different results. Consequently, the claimed subject-matter was sufficiently disclosed.
- (c) As regards novelty, D1 as well as D9 disclosed a shampoo composition comprising an anionic surfactant, a water soluble cationic surfactant,

an insoluble silicone conditioning agent, a water soluble cationic polymer as well as a compound containing Mg in the amounts now being claimed. Since the average particle size of the silicone particles was not disclosed in D1 or D9, the claimed subject-matter was novel.

- (d) As regards inventive step, D12 was considered to be the closest state of the art. The patent in suit aimed at a consistent deposition on the hair of nonvolatile, insoluble silicone and water soluble cationic conditioning agents when using water in a broad range of hardness.

The problem of consistent deposition of the conditioning agents had already been mentioned in the application as filed and it had been solved: about the same amounts of silicone and cationic conditioning agents were deposited on the hair, no matter whether soft or hard water was used. Although the comparative tests did not demonstrate a particular technical effect, the problem to be solved was to modify the shampoo compositions of D12 such that a consistent deposition of the conditioning agents was achieved for both hard and soft water. In the absence of any evidence from the opponents to the contrary, this technical problem was considered to be solved.

As regards obviousness, D12 did not disclose any polyvalent metal ions for solving the problem posed.

D1 did not relate to the present problem and it contained no suggestion that Mg ions present in a conditioning shampoo composition were associated with the deposition of the conditioning system on the hair.

D9 was merely a collection of various shampoo compositions and did not contain any indication concerning any specific effects, in particular, of the deposition of conditioning agents.

D17 did not disclose insoluble silicone particles and provided no hint about the deposition of the conditioning agents in both soft and hard water.

Consequently, the claimed subject-matter was not made obvious when combining the teaching of D12 with any of the other documents on file. It therefore involved an inventive step.

V. On 29 March 2001 opponent 03 (appellant 02) filed a notice of appeal against the above decision, the prescribed fee being paid on the same day. The statement setting out the grounds of appeal was filed on 4 July 2001.

On 27 April 2001 opponent 01 (appellant 01) filed a notice of appeal against the above decision, the prescribed fee being paid on the same day. The statement setting out the grounds of appeal was filed on 20 July 2001.

Opponent 02 did not file an appeal and is a party as of right.

VI. By letter dated 27 May 2002, the proprietor (respondent) submitted a test report. By letter dated 26 September 2006, appellant 01 submitted two test reports.

VII. Oral proceedings were held on 26 October 2006, at which the respondent submitted a main request of eight claims (two pages) and an auxiliary request of seven claims (two pages).

Claim 1 of the main request differed from claim 1 as maintained in the decision under appeal in that in feature (c) the term "99.9% by weight" was replaced by the term "99.5% by weight".

In the auxiliary request, claims 1 and 7 differed from claims 1 and 8, respectively, of the main request in that the level of polyvalent metal cations in free ion form was limited to "0.01M to 0.02 M".

VIII. The arguments of the appellants and of opponent 02 can be summarized as follows:

- (a) The parties did not raise any formal objections with respect to the amendments to the main and auxiliary requests.
- (b) As regards sufficiency of disclosure, the patent in suit, including the examples, did not disclose any method for determining the particle size and did not indicate whether the average particle size was calculated by volume, number or surface, each calculation leading to a different result.

Furthermore, the patent in suit did not disclose to which specific mixing conditions the composition should be subjected in order to achieve the claimed particle size. Hence, the disclosure in the patent in suit was insufficient to enable the skilled person to reproduce the claimed shampoo composition (Article 83 EPC).

- (c) As regards novelty, reference was made to D1 and D9, which disclosed compositions comprising magnesium in the claimed amount and the other components of the composition according to the main request. D1 also disclosed the amount of magnesium as defined in the auxiliary request. Since the average particle size of the silicone was undefined, it could not serve to distinguish the claimed subject-matter over D1 and D9. Anyway, if the particle size was automatically obtained by using a simple conventional mixing process, as stated by the respondent, the particle sizes of the silicone in D1 and D9 had to fall within the claimed range. Consequently, the claimed subject-matter was not novel.
- (d) As regards inventive step, appellant 01 considered D1 to be the closest state of the art since it concerned the simultaneous deposition of three conditioning agents on the hair. The only difference between the claimed-subject-matter and D1 was the particle size of the silicone. The respondent's tests were no genuine comparison since the compared compositions differed from each other in more than only the distinguishing feature. As there was no evidence on file that the average

particle size of the silicone provided any specific effect over D1, the technical problem could only reside in the provision of an alternative shampoo to that of D1. The effect of magnesium on the deposition of the conditioning agents on the hair was described in D1 and D9. The average particle size of the silicone was known from D12. Hence, the claimed subject-matter was obvious. The claims of the auxiliary request provided no further distinction over D1.

According to appellant 02, D9 could also be used as the starting point, since, with the exception of the average particle size of the silicone, it disclosed all features of claim 1 of the main request. Arguments similar to those when starting from D1 could be applied.

Starting from D12, the claimed subject-matter differed from D12 only in that polyvalent metal cations were present in the composition. The comparative tests of the respondent were not based on a composition of D12 and did not demonstrate any improved deposition of the conditioning agents, in particular of the cationic polymer, when using either hard or soft water. Consequently, the problem to be solved could only reside in the provision of an alternative shampoo composition over that of D12. The solution of that problem was obvious in view of D1 or D9.

Consequently, the subject-matter of the main and the auxiliary requests did not involve an inventive step.

IX. The arguments of the respondent can be summarized as follows:

- (a) The amendments made to the main and auxiliary request had a basis in the application as filed.
- (b) As regards sufficiency of disclosure, the patent in suit described six exemplified compositions that were prepared by pumping the composition through a high shear mill. As shown by the respondent's test report dated 27 February 2002, the claimed average particle size could be obtained when using suitable mixing conditions.

The insoluble silicone in the shampoo composition was present in the form of liquid droplets which formed spherical particles. The spherical silicone droplets could be characterized by the diameter which was visible and measurable under a microscope. Consequently, the patent in suit enabled the skilled person to carry out the invention without undue burden.

- (c) As regards novelty, D1 and D9 neither disclosed the claimed average particle size of the silicone nor any high shear mixing during the manufacture of the compositions. According to the respondent's test report of 27 May 2002, the average particle size of the silicone could fall inside or outside of the claimed range depending on the mixing conditions. Thus, the claimed average particle size could not be the inevitable result of the unspecified mixing conditions of the prior art.

In addition, the claimed amount of magnesium according to the auxiliary request was outside the amount present in the compositions of D1 and D9.

Consequently, the subject-matter of the main and the auxiliary request was novel.

- (d) As regards inventive step, the closest state of the art was D12 as it concerned a problem similar to that underlying the present invention and had more features in common with the claimed subject-matter than D1 or D9. The problem to be solved vis-à-vis D12 was to provide a shampoo composition containing a mixture of insoluble silicone and cationic conditioning agents which provided improved consistency of conditioning performance for the hair regardless of whether the composition was used in hard or soft water, in line with the patent in suit. That problem was solved as shown by the respondent's comparative data of 27 May 2002.

D12 did not disclose that polyvalent metal cations had any beneficial effect on the deposition of conditioning agents on the hair.

D1 concerned the deposition of three different conditioning agents on the hair but did not address the problem regarding the use of hard or soft water and the influence of polyvalent metal cations thereon. D9 was even less relevant than D1.

The teaching of D1 or D9 did not provide any incentive for the skilled person to modify D12 in the direction as now claimed.

As regards the auxiliary request, the claimed subject-matter was more limited and the arguments regarding the main request applied *a fortiori*.

Consequently, the subject-matter of the claims involved an inventive step.

- X. The appellants requested that the decision under appeal be set aside and that the European patent No. 0 706 366 be revoked.

- XI. The respondent requested that the decision under appeal be set aside and that the patent be maintained on the basis of the main request or the auxiliary request both submitted at the oral proceedings on 26 October 2006.

Reasons for the Decision

- 1. The appeal is admissible.

Procedural matters

- 2. The respondent had objected to the test reports of appellant 01 submitted with letter of 26 September 2006 as being late filed and had requested that they should not be admitted to the proceedings.
 - 2.1 The first test report concerns the measurement of the particle size (number, volume, and surface) of a

silicone in a shampoo composition used in the respondent's test of 27 May 2002. In the other test report the conditioning properties between a shampoo composition according to the patent in suit and modified compositions thereof are compared. Similar comparative tests had been submitted in the respondent's letter of 10 April 2000.

2.2 The appellant 01's tests were only filed at a very late stage of the appeal proceedings (1 month before the oral proceedings). As the respondent's tests had been on file for more than 4 years or even more than 6 years, appellant 01 had had sufficient time to submit experiments at a much earlier stage of the proceedings. Consequently, the argument that the tests have been done in reaction to the board's communication cannot be accepted.

2.3 Furthermore, since the tests of appellant 01 do not reproduce a shampoo composition according to example 10 of D1, they cannot be of much relevance for the question of novelty whether or not the shampoo composition of example 10 of D1 meets the claimed average particle size of the silicone and the question of inventive step whether or not any improved deposition has been achieved vis-à-vis D1 as the closest state of the art.

2.4 Hence, the board makes use of its discretion under Article 114(2) EPC and does not admit the late filed tests of appellant 01 into the proceedings.

Amendments to the claims

3. The amendment made to claim 1 of the main request concerns the upper amount of water of "99.5" % by weight. That number is based on claim 1, feature (c) of the application as filed as well as of the granted patent and concerns a correction of the number in claim 1 as maintained in the decision underlying the appeal. The finding in the decision under appeal that the other amendments made to the granted claims met the requirements of Article 123(2) and (3) EPC, have not been challenged by the appellants and the board sees no reason to take a different view.

3.1 The amendments made to claims 1 and 7 of the auxiliary request compared to claims 1 and 8, respectively, of the main request concern the level of polyvalent metal cation in free ion form to be "0.01M to 0.02M". That level is disclosed in claim 9 of the application as filed as well as of the granted patent and concerns a restriction compared to the level of granted claims 1 and 10.

3.2 Thus, the amendments made to the claims of the main and the auxiliary request meet the requirements of Article 123(2) and (3) EPC.

Novelty

4. The appellants argued that the claimed subject-matter was anticipated by documents D1 or D9.

4.1 D1 discloses a cosmetic composition comprising at least one water-dispersible cationic surfactant, at least one

water-soluble quaternised protein and at least one cationic silicone polymer (claim 1). Example 10 of D1 discloses an aqueous shampoo composition comprising 5 g active material (MA = matière active) of an anionic surfactant ($\text{CH}_3-(\text{CH}_2)_{11}-\text{CH}_2-(\text{OCH}_2-\text{CH}_2)_6\text{OCH}_2-\text{COONa}$; Sandopan DTC), 0.8 g active material of a cationic silicone conditioning agent (Ucar Silicone ALE 56), 1.2 g active material of a water soluble cationic surfactant (stearamido propyl dimethyl (myristyl acetate) ammonium chloride; Ceraphyl 70), 0.5 g active material of a water soluble protein hydrolysate comprising quaternary ammonium groups (Croquat S) and 3.0 g active material of a laurylethersulfate salt of Na and Mg (Texapon ASV). The remainder up to 100 g is provided by water. The composition hence contains 10.5 g of active material and 89.5 g water, which meets the requirements of component (c) of claim 1.

4.2 The silicone "Ucar Silicone ALE 56" used in D1 is mentioned in the patent in suit as an example of an especially preferred insoluble nonvolatile silicone (page 12, lines 24 and 25). Furthermore, according to the patent in suit, magnesium, which is present in the commercial product "Texapon ASV" of D1, is one of the most preferred polyvalent cations (page 19, line 10) and can be present in the form of a salt of a surfactant such as an anionic surfactant (page 19, lines 5 and 6). Hence, the surfactant Texapon ASV is a suitable source for the magnesium ions in line with the patent in suit.

4.3 There has been a dispute between the parties in which molar concentration the magnesium ions are present in the shampoo compositions of D1.

- 4.3.1 According to example 10 of D1, Texapon ASV is sold by the company Henkel and contains the active material in a concentration of 30%. According to D2, Texapon ASV has been analysed on 22 February 1990 with the result that it contained 0.565% MgO. The analysed amount of MgO of 0.565% in the Texapon ASV formed the basis for calculating the molar concentration of magnesium ions present in the shampoo composition of D1 according to the approach of all parties.
- 4.3.2 The respondent's calculation started from the assumption that in example 10 of D1 the amount of 3 g refers to Texapon ASV in the form of its liquid commercial product. In that case the calculated concentration would be 0.0042M which is within the range of the main request.
- 4.3.3 The calculation of the appellants differs from that of the respondent only in that a different basis for the amount of Texapon ASV in the composition is considered. The appellants use the amount of the active material as the basis for the calculation whilst the respondent's calculation refers to the amount of the solution containing the active material in a concentration of 30%. According to Example 10 of D1, the added amount (3g) clearly refers to the active material (MA = matière active) of Texapon ASV so that the added amount of the active material is the correct basis for the calculation. The molar concentration of Mg in the composition of example 10 can thus be calculated to be 0.014M, which is within the claimed range and in line with the result indicated in the decision under appeal (point 5.1).

- 4.4 In D1, the particle size of the silicone is not mentioned, nor is there any disclosure of the conditions under which the shampoos are prepared. As shown by the respondent's test report submitted with letter of 27 May 2002, the average particle size of a shampoo composition can be controlled by modifying the shear rate during mixing. When the mixing rate is at a low speed of 150 min^{-1} , the number average particle diameter is $25 \text{ }\mu\text{m}$ (outside the claimed range), whilst when mixing the shampoo at a high speed of 450 min^{-1} the number average particle size is $19 \text{ }\mu\text{m}$ (within the claimed range).

In view of the above considerations it is concluded that the average particle size cannot clearly and unambiguously be derived from D1.

- 4.5 D9 (page 90) discloses the shampoo composition "Gentle Shampoo" comprising, among others, component A including 25% Texapon ASV, component B including 0.3% dimethicone and component C including 0.5% PEG-15 tallow polyamine (Polyquart H 81). The "Gentle Shampoo" is prepared by dissolving component B in component A to obtain a clean blend. Separately, component C is mixed until dissolved. Under gentle agitation component C is poured into the combined components AB to obtain a homogeneous preparation (D9, "Gentle Shampoo", Procedure). The molar concentration of magnesium ions (see point 4.3 above) in the shampoo composition is calculated to be 0.0106M according to the respondent and 0.0365M according to the appellants.

4.6 Although dimethicone is a silicone considered to be water insoluble, according to D9 it is dissolved in a surfactant mixture comprising Texapon ASV. Furthermore, component C is added under gentle mixing conditions. There is no evidence on file that under these conditions silicone particles of the claimed size are formed. The onus of proof in this respect lies with the opponents (appellants), which they fail to discharge (T 219/83, OJ EPO 1986, 211).

4.7 From the above it follows that the cited prior art documents D1 and D9 disclose a molar concentration of Mg ions in the shampoo composition that meets the requirements of claim 1 of the main request, even if the respondent's calculation is considered. However, D1 and D9 do not directly and unambiguously disclose silicone particles having the claimed average particle size.

4.8 Hence, the claimed subject-matter of the main request is novel over D1 or D9.

Inventive step

Closest state of the art

5. The patent in suit concerns conditioning shampoos containing polyvalent metal cations. Such compositions are known from the prior art, in particular D1, which the appellant 01 regarded as the closest prior art document, or from D9, which was the starting point of appellant 02, or D12 which the respondent and the opposition division considered as the closest state of the art.

5.1 According to the patent in suit, it was well known in the hair conditioning art that different types of hair require different types and amounts of conditioning agents. It had been found, for instance, that dry, damaged, colour treated and permed hairs typically had the greatest need for the conditioning benefits of water insoluble silicones and water soluble cationic conditioning agents (page 2, lines 38 to 41).

Furthermore, it had been found that conditioning shampoos containing insoluble silicones and water soluble cationic conditioning agents can have a widely differing performance on the same hair types depending upon where the person using the product was located. In particular, the hardness of the water used to wash and rinse the hair could influence the performance of both the insoluble silicone and the cationic conditioning agents. For example, hard water increased the deposition on hair of soluble cationic conditioning agents such as water soluble cationic polymers, but decreased the deposition on hair of nonvolatile silicone, whereas soft water decreased the deposition on hair of soluble cationic conditioning agents and increased the deposition of water insoluble silicone (page 2, lines 46 to 52).

5.2 The patent in suit aims at conditioning shampoo compositions containing insoluble silicones that provide improved consistency of conditioning performance for the hair regardless of whether the composition is used in hard or soft water.

- 5.3 D1 aims at hair-care cosmetic compositions providing the simultaneous deposition of the water-dispersible cationic surfactant, the water-soluble quaternised protein and the cationic silicone polymer on hair, resulting in improved disentangling, softness, shape-retention and liveliness of the hair. It is at the same time light, resilient, shiny and antistatic and its feel and its appearance is very silky (page 2, lines 4 to 12).
- 5.4 D9 discloses a collection of various shampoo compositions. Although the "Gentle shampoo" contains Texapon ASV, there is no direct and explicit mention that it contains magnesium ions. Furthermore, D9 does not contain any indication concerning any specific effect, in particular regarding the deposition of conditioning agents on the hair.
- 5.5 D12 discloses a liquid hair conditioning shampoo composition comprising:
- (a) from 5% to 50%, by weight, of an anionic surfactant component;
 - (b) from 0.1% to 10%, preferably from 0.5% to 10%, by weight, of a dispersed, insoluble, nonvolatile, nonionic silicone hair conditioning agent;
 - (c) from 0.05% to 10%, by weight, of soluble, organic, polymeric cationic hair conditioning agent, said polymeric, cationic hair conditioning agent consisting essentially of one or more cationic hair conditioning polymers, said cationic hair conditioning polymers having quaternary ammonium or cationic amino moieties,

or a mixture thereof, an open chain backbone, and a charge density of +3.0 meq/gram or less; and

(d) an aqueous carrier (claim 1). The average particle size of the silicone in the shampoo composition of D12 is 5 to 20 μm (page 26, lines 33 and 34).

According to D12, silicone hair conditioner efficiency for treated hair appeared to be lower than that for undamaged hair. It aimed at providing a shampoo composition that would produce excellent overall cleaning and conditioning benefits for damaged hair, as well as for other types of hair not subjected to such treatments (page 2, line 27 to page 3, line 8).

5.6 According to established jurisprudence, the closest prior art for the purpose of assessing inventive step is generally that which corresponds to a purpose or technical effect similar to that of the invention and requiring the minimum of structural and functional modifications (Case Law of the Boards of Appeal of the European Patent Office, 4th Edition 2001, I.D.3.1).

5.6.1 The opposition division and the respondent were of the opinion that D12 came closer to the problem sought to be solved by the patent in suit than D1, since the hair conditioning benefits in D12 concerned variable conditions, such as the type of hair (damaged vs. undamaged). Furthermore, the shampoo compositions of D12 had more features in common with the claimed subject-matter than those of D1.

The claimed subject-matter differs from D1 in that a silicone having a specific average particle size is

used. It differs from D12 in that the polyvalent metal ions are present in the composition in a specific amount. Thus, whilst in D12 an essential component (polyvalent cation) and its specific amount are not indicated, in D1 another essential component, namely the silicone, is present but only its particle size is not indicated. Consequently, D1 has more features in common with the claimed subject-matter than D12.

5.6.2 Also, the presence of polyvalent metal cations in the compositions concerns the core of the patent in suit (page 3, lines 45 and 46; granted claim 10), since it increases the hardness of water in the compositions and thus provides a more consistent deposition regardless of the hardness of the water being used to wet and rinse the hair. On the other hand, the average particle size of the silicone is only casually mentioned without indicating any specific technical effect (patent in suit, page 23, lines 13).

5.6.3 Furthermore, the problem addressed in the patent in suit is related to the deposition of conditioning agents on the hair. Whilst D1 aims at a simultaneous deposition of different conditioning agents, including cationic and silicone conditioning agents, D12 is related to the provision of shampoos applicable for damaged and undamaged hair. Therefore, the technical effect mentioned in D1 comes closer to the problem of consistent deposition according to the patent in suit than the technical effect described in D12.

5.6.4 D9 does not specifically concern the deposition of conditioning agents on the hair. Hence, D9 is less relevant than D1 and D12.

5.7 In view of the above, the board considers D1 to be the closest state of the art (Case Law, *supra*, I.D.3.4).

Problem and solution

6. The problem addressed in the patent in suit is to achieve a consistent deposition of conditioning agents on the hair, regardless of the hardness of the water that is used. There are no comparative tests in the patent in suit showing that the claimed composition provides any improvement over the shampoo compositions of D1.

6.1 In the experiments filed with the respondent's letter of 10 April 2000, two shampoo compositions are tested, one containing magnesium ions (invention) whilst the other composition does not contain magnesium ions (comparison). However, the composition according to the patent in suit differs from the comparative composition not only by the presence of magnesium but also in different amounts of four other components. Therefore, the test results are not comparable (Case Law, *supra*, I.D.7.7.2). Thus, those tests cannot provide evidence for any improvement over the closest state of the art.

6.1.1 In a further test filed with the respondent's letter of 27 May 2002, three shampoo composition corresponding to example V of the patent in suit were prepared containing silicone particles with an average diameter of 0.3 micron, 19 micron and 25 micron, respectively. However, those experiments are not carried out both in hard and in soft water so that the test results cannot

provide any conclusion regarding the consistent deposition of such compositions in that respect.

6.1.2 Furthermore, there are no experimental results at all on file which concern the deposition of the cationic conditioning agent. According to the patent in suit the deposition of the silicone conditioning agent and the cationic conditioning agent is different dependent on whether the shampoo is used in hard or soft water (page 2, lines 44 to 52). The above mentioned tests do not show that a composition comprising both types of conditioning agents, as claimed, provides an improved deposition consistency over compositions of the closest prior art document.

6.2 As there is no evidence on file that the claimed composition has improved properties over that of D1, the problem effectively solved can only be seen in providing an further conditioning shampoo composition containing cationic and insoluble silicone conditioning agents.

Obviousness

7. It remains to be decided whether the claimed subject-matter is obvious having regard to the documents on file.

7.1 According to D12, the average particle size of the silicone is preferably from about 0.5 microns to about 20 microns (page 26, lines 33 and 34) which completely covers the claimed range.

7.2 Since no improved effect of the particle size of the silicone vis-à-vis D1 has been shown, it is obvious for the skilled person to use any insoluble silicone component in the composition of D1 eg that having the usual average particle size as indicated in D12. Hence, the solution of the above identified problem is not inventive.

Other starting point

8. No other conclusion would be reached when starting from D12 as the closest state of the art.

8.1 The respondent argued that the experiments filed with letter of 10 April 2000 demonstrated an improved consistency in conditioning performance over D12, since the comparative example in that test report was based on example III of D12.

However, a closer look shows that the comparative example has a number of differences in the components and the used amounts compared with example III of D12. Therefore, the respondent's argument that the comparative composition of that report is oriented at example III of D12 is not convincing. For that reason, those tests cannot provide evidence for any improvement over D12.

8.2 Hence, the problem of the patent in suit could only be seen in providing an alternative conditioning shampoo composition to that of D12, as was the case vis-à-vis D1.

The claimed subject-matter differs from D12 in that the anionic surfactant does not explicitly contain Mg. However, it is within the normal possibilities of the skilled person to vary the ingredients for providing an alternative composition and to use a Mg containing surfactant, as used in D1 such as e.g. Texapon ASV.

- 8.3 Therefore, the claimed subject-matter is not inventive when starting from D12 either.

Auxiliary request

9. According to claim 1 of the auxiliary request, the concentration of the polyvalent metal cations is limited to 0.01M to 0.02M. Example 10 of D1 discloses a magnesium concentration of 0.014M (see point 4.3 above), within the claimed range. Therefore, the amendment to claim 1 of the auxiliary request does not provide any further distinction over the closest state of the art (D1) so that the same considerations as outlined under points 6 to 8 above with respect to the main request apply *mutatis mutandis* to the auxiliary request as well.
10. Hence, the claimed subject-matter of both the main and the auxiliary request lacks an inventive step.
11. In view of the above, the question whether or not the claimed subject-matter meets the requirements of Article 83 EPC, can be left unanswered.

Order

For these reasons it is decided that:

1. The decision under appeal is set aside.
2. The patent is revoked.

The Registrar:

The Chairman:

T. Buschek

S. Perryman